







2002 STANDARD DRAWINGS

http://www.udot.utah.gov/esd/esdmenu3.htm

Change Four, July 14, 2003

Memorandum utah department of transportation

DATE: February 19, 2003

TO: Region Directors

Project Engineers

Project Design Engineers

Project Managers

Consultants and Contractors

FROM: Barry Axelrod, CDT

Standards and Specifications

SUBJECT: Standard Drawing [U.S. Standard Unit (Inch-Pound Units)] Change 1 Dated

February 19, 2003

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	<u>INSERT</u>
Index	Index - revised
Sheet 1C	Sheet 1C – revised
Sheet 1D	Sheet 1D – revised
AT 7	AT 7 – revised
BA 1A	BA 1A – revised
BA 1B	BA 1B – revised
BA 3	BA 3 – revised
BA 4B	BA 4B – revised
N/A	BA 4C - new
CC 6	CC 6 – revised
DG 3	DG 3 – revised
DG 4	DG 4 – revised
EN 4	EN 4 – revised
GW 1	GW 1 – revised
PV 2	PV 2 – revised
SL 13	SL 13 – revised
SN 2	SN 2 – revised
SN 4	SN 4 – revised
SN 5	SN 5 – revised
SN 8	SN 8 – revised
ST 1	ST 1 – revised
ST 7	ST 7 – revised
SW 3A	SW 3A – revised
SW 3B	SW 3B – revised
SW 4A	SW 4A – revised

Electronic files for all Standards Drawings are available from the Standards and Specifications Web page on the Internet. The files are in Adobe pdf format.

If you have any questions or problems with the electronic files contact me at (801) 964-4570 or by email at baxelrod@utah.gov.

Listing of Revised Standard Drawings

Change One

Revised December 19, 2002

AT 7	Polymer Concrete Junction Box Details	12/19/2002
BA 1A	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 1B	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 3	Cast In Place Constant Slope Barrier	12/19/2002
BA 4B	Beam Guardrail Installations	12/19/2002
BA 4C	Beam Guardrail Anchor Type I	12/19/2002
CC 6	Crash Cushion Type E Sand Barrel Details	12/19/2002
DG 3	Maximum Fill Height and End Sections for HDPE	
	And PVC Pipes	12/19/2002
DG 4	Pipe Culverts Minimum Cover	12/19/2002
EN 4	Temporary Erosion Control (Drop-Inlet Barriers)	12/19/2002
GW 1	Raised Median and Plowable End Section	12/19/2002
PV 2	Pavement Approach Slab Details	12/19/2002
SL 13	Traffic Counting Loop Detector Details	12/19/2002
SN 2	Flashing School Sign	12/19/2002
SN 4	Flashing Stop Sign	12/19/2002
SN 5	Typical Installation For Milepost Signs	12/19/2002
SN 8	Ground Mounted Timber Sign Post (P1)	12/19/2002
ST 1	Object Marker "T" Intersection and Pavement	
	Transition Guidance	12/19/2002
ST 7	Pavement Markings and Signs at Railroad Crossings	12/19/2002
SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/2002
SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/2002
SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/2002

Memorandum utah department of transportation

DATE: March 24, 2003

TO: Region Directors

Project Engineers

Project Design Engineers

Project Managers

Consultants and Contractors

FROM: Barry Axelrod, CDT

Standards and Specifications

SUBJECT: Standard Drawing [U.S. Standard Unit (Inch-Pound Units)] Change 2 Dated

March 24, 2003

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	<u>INSERT</u>
Index	Index - revised
Sheet 1C	Sheet 1C – revised
GW 2	GW 2 – revised
GW 5	GW 5 – revised

Note: In Change One, dated February 19, 2003, the Remove and Insert pages incorrectly listed Sheet 1C and Sheet 1D. It should have read Sheet 1B and Sheet 1C for both Remove and Insert.

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Listing of Revised Standard Drawings

Change Two

Revised February 27, 2003

GW 2	Concrete Curb and Gutter	02/27/2003
GW 5	Pedestrian Access	02/27/2003

Memorandum utah department of transportation

DATE: June 2, 2003

TO: Region Directors

Project Engineers

Project Design Engineers

Project Managers

Consultants and Contractors

FROM: Barry Axelrod, CDT

Standards and Specifications

SUBJECT: Standard Drawing [U.S. Standard Unit (Inch-Pound Units)] Change 3 Dated June

2, 2003

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	<u>INSERT</u>
Index	Index - revised
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
AT 7	AT 7 - revised
CB 2	CB 2 - revised
CC 7	CC 7 - revised
CC 8	CC 8 - revised
N/A	CC 9A - new
N/A	CC 9B - new
EN 2	EN 2 - revised
GW 2	GW 2 - revised
SN 12B	SN 12B - revised

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Listing of Revised Standard Drawings

Change Three

Revised April 24, 2003

AT 7	Polymer-Concrete Junction Box Details	04/24/2003
CB 2	Curb Inlet Catch Basin	04/24/2003
CC 7	Grading & Installation Details Crash Cushion Type F	04/24/2003
CC 8	Grading & Installation Details Crash Cushion Type G	04/24/2003
CC 9A	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
CC 9B	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
EN 2	Temporary Erosion Control (Silt Fence)	04/24/2003
GW 2	Concrete Curb and Gutter	04/24/2003
SN 12B	Ground Mounted Sign Installation Details	04/24/2003

Memorandum utah department of transportation

DATE: July 14, 2003

TO: Region Directors

Project Engineers

Project Design Engineers

Project Managers

Consultants and Contractors

FROM: Barry Axelrod, CDT

Standards and Specifications

SUBJECT: Standard Drawing [U.S. Standard Unit (Inch-Pound Units)] Change 4 Dated July

14, 2003

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

<u>REMOVE</u>	<u>INSERT</u>
Index	Index - revised
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
N/A	DD 1 - new
N/A	DD 3 - new
N/A	DD 8 - new
N/A	DD 9 - new
N/A	DD 10 - new
N/A	DD 11 - new
N/A	DD 12 - new
N/A	DD 13 - new
GW 2	GW 2 - Revised

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Listing of Revised Standard Drawings

Change Four

Revised June 26, 2003

DD 1	Superelevation and Widening	06/26/2003
DD 3	Climbing Lanes	06/26/2003
DD 8	Structural Geometric Design Standards Clearances	06/26/2003
DD 9	Structural Geometric Design Standards	06/26/2003
DD 10	Railroad Clearances At Highway Overpass Structures	06/26/2003
DD 11	Rural Multi Lane Highways Other Than Freeways	06/26/2003
DD 12	Rural Two Lane Highways	06/26/2003
DD 13	Frontage and Access Roads (Under 50 ADT)	06/26/2003
GW 2	Concrete Curb & Gutter	06/26/2003

STANDARD DRAWINGS INDEX (Change Four, Dated 07/14/03) UTAH DEPARTMENT OF TRANSPORTATION

U	NUMBER	TITLE	CURRENT
<u> </u>		Advanced Traffic Management System (AT)	DATE
		Advanced Traffic Management System (AT)	.
	AT 1	Legend Sheet	07/03/02
	AT 2	Ramp Meter Details	07/03/02
	AT 3	Ramp Meter Sign Panel	07/03/02
	AT 4	Typical Ramp Meter Signal Head Mounting	07/03/02
	AT 5	Loop Installation	07/03/02
	AT 6	Conduit Details	07/03/02
	AT 7	Polymer-Concrete Junction Box Details	04/24/03
	AT 8	ATMS Cabinet w/120V Disconnect	07/03/02
	AT 9	ATMS Cab With Stepdown Transformer	07/03/02
	AT 10	Domed CCTV Details	07/03/02
	AT 11	CCTV Pole Detail	07/03/02
	AT 12	CCTV Pole Foundation For Dedicated CCTV Pole	07/03/02
	AT 13	120V VMS Cab Foundation Details	07/03/02
	AT 14	Weigh In Motion Piezo Detail	07/03/02
		Barriers (BA)	
	BA 1A	Precast Concrete Full Barrier Standard Section	12/19/02
	BA 1B	Precast Concrete Full Barrier Standard Section	12/19/02
	BA 2	Precast Concrete Half Barrier Standard Section	07/03/02
	BA 3	Cast In Place Constant Slope Barrier	12/19/02
	BA 4	Beam Guardrail Hardware	07/03/02
	BA 4A	Guardrail Transition	07/03/02
	BA 4B	Beam Guardrail Installation	12/19/02
	BA 4C	Beam Guardrail Anchor Type I	12/19/02
	BA 5	Traffic Control Cable	07/03/02

U	NUMBER	TITLE	CURRENT DATE
		Catch Basins and Cleanouts (CB)	
	CB 1	Standard Catch Basin	07/03/02
	CB 2	Curb Inlet Catch Basin	04/24/02
	CB 3	Standard Transition Concrete Lined Ditch To Pipe Or Diversion Box	07/03/02
	CB 4	Solid Cover For Standard Drawing DB 1 MS-18 Loading	07/03/02
	CB 5	Standard Screw Gate And Frame	07/03/02
	CB 6A	Standard Drop Inlet Details General Notes And Installation Detail	07/03/02
	CB 6B	Standard Catch Basin And Cleanout Box Drop Inlet Type "A" Details	07/03/02
	CB 6C	Standard Catch Basin And Cleanout Box Drop Inlet Type "B" Details	07/03/02
	CB 6D	Standard Catch Basin And Cleanout Box Drop Inlet Type "C" Details	07/03/02
	CB 6E	Standard Catch Basin And Cleanout Box Drop Inlet With Attached Apron Details	07/03/02
	CB 6F	Standard Catch Basin And Cleanout Box Drop Inlet With Attached Apron Details	07/03/02
	CB 6G	Standard Catch Basin And Cleanout Box Drop Inlet Type "D" Details	07/03/02
	СВ 6Н	Standard Catch Basin And Cleanout Box Drop Inlet Type "D" Tables	07/03/02
	CB 7	Standard Curb And Gutter Drop Inlet	07/03/02
	CB 8A	Double Catch Basin	07/03/02
	CB 8B	Double Catch Basin	07/03/02
	CB 9A	Standard Catch Basin and Cleanout Box Situation & Layout	07/03/02
	CB 9B	Standard Catch Basin and Cleanout Box Section Details	07/03/02
	CB 9C	Standard Catch Basin and Cleanout Box Schedule Of Installation 18" to 42" RCP 12" to 48" CMP	07/03/02
	CB 9D	Standard Catch Basin and Cleanout Box Schedule Of Installation 48" to 66" RCP 60" to 78" CMP	07/03/02
	CB 10A	Standard Catch Basin and Cleanout Box Situation & Layout	07/03/02
	CB 10B	Standard Catch Basin and Cleanout Box Section Details	07/03/02
	CB 10C	Standard Catch Basin and Cleanout Box Schedule Of Installation 42" to 60" RCP 48" to 72" CMP	07/03/02

U	NUMBER	TITLE	CURRENT DATE
		Crash Cushions (CC)	
	CC 1	Crash Cushion Markings	07/03/02
	CC 2	Crash Cushion Drainage Details Guideline A	07/03/02
	CC 3	Crash Cushion Drainage Details Guideline B	07/03/02
	CC 4	Details For Placement Crash Cushions Type A, B, & D	07/03/02
	CC 5	Grading And Placement Detail Crash Cushion Type C	07/03/02
	CC 6	Crash Cushion Type E Sand Barrel Details	12/19/02
	CC 7	Grading & Installation Details Crash Cushion Type F	04/24/03
	CC 8	Grading & Installation Details Crash Cushion Type G	04/24/03
	CC 9A	Grading & Installation Details Crash Cushion Type H	04/24/03
	CC 9B	Grading & Installation Details Crash Cushion Type H	04/24/03
		Diversion Boxes (DB)	
	DB 1A	Standard Diversion Box/Cover Plate/Grating For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1B	Standard Diversion Box Hinged Lid Details For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1C	Standard Diversion Box Bicycle - Safe Grating Details For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1D	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1E	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 1F	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	07/03/02
	DB 2A	Standard Diversion Box w/Interchangeable Walls, Bottom Slab, Walls and Apron Detail	07/03/02
	DB 2B	Standard Diversion Box w/Interchangeable Walls, Quantities Schedule	07/03/02
	DB 2C	Standard Diversion Box w/Interchangeable Walls, Hand Slide Gate Details	07/03/02
	DB 2D	Standard Diversion Box Type "G" Hand Slide Details	07/03/02
	DB 2E	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type I Plan	07/03/02
	DB 2F	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type II Plan	07/03/02
	DB 2G	Standard Diversion Box Hinged Lid Solid Cover Type "B" Details	07/03/02

U	NUMBER	TITLE	CURRENT DATE
	DB 2H	Standard Diversion Box Hinged Lid Solid Cover Type "B" & "C" Details	07/03/02
	DB 3A	Standard Diversion Box With Manhole Cover Situation And Layout	07/03/02
	DB 3B	Standard Diversion Box With Manhole Cover Up To 42" RCP and Up To 54" CMP	07/03/02
	DB 3C	Standard Diversion Box With Manhole Cover 48" - 72" RCP and 60" to 84" CMP	07/03/02
		Design Drawings (DD)	
	DD 1	Superelevation and Widening	06/26/03
	DD 3	Climbing Lanes	06/26/03
	DD 8	Structural Geometric Design Standards Clearances	06/26/03
	DD 9	Structural Geometric Design Standards	06/26/03
	DD 10	Railroad Clearances At Highway Overpass Structures	06/26/03
	DD 11	Rural Multi Lane Highways Other Than Freeways	06/26/03
	DD 12	Rural Two Lane Highways	06/26/03
	DD 13	Frontage and Access Roads (Under 50 ADT)	06/26/03
		Drainage (DG)	1
	DG 1	Fill Height for Metal Pipe (Steel)	07/03/02
	DG 2	Fill Height for Metal Pipe (Aluminum)	07/03/02
	DG 3	Maximum Fill Height and End Sections For HDPE and PVC Pipes	12/19/02
	DG 4	Pipe Culverts Minimum Cover	12/19/02
	DG 5	Plastic Pipe, Metal Pipe or Pipe Arch Culvert Bedding	07/03/02
	DG 6	Precast Concrete Pipe Culvert	07/03/02
	DG 7	Gasketted Joints or Coupling Bands for C.M.P.	07/03/02
	DG 8	Metal Culvert End Sections	07/03/02
	DG 9	Miscellaneous Pipe Details	07/03/02
		Environmental Controls (EN)	1
	EN 1	Temporary Erosion Control (Check Dams)	07/03/02
	EN 2	Temporary Erosion Control (Silt Fence)	04/24/03
	EN 3	Temporary Erosion Control (Slope Drain and Temporary Berm)	07/03/02

U NUMBER	TITLE	CURRENT DATE				
EN 4	Temporary Erosion Control (Drop Inlet Barriers)	12/19/02				
EN 5	Temporary Erosion Control (Sediment Trap and Curb Inlet Barrier)	07/03/02				
	Fence and Gates (FG)	L				
FG 1A	Right-of-Way Fence and Gates (Wood Posts)	07/03/02				
FG 1B	Right-of-Way Fence and Gates (Wood Posts)	07/03/02				
FG 2A	Right-of-Way Fence and Gates (Metal Posts)	07/03/02				
FG 2B	Right-of-Way Fence and Gates (Metal Posts)	07/03/02				
FG 3	Swing Gates Type I for Gates Less Than 17'	07/03/02				
FG 4	Deer Gates	07/03/02				
FG 5	Swing Gates Type II for Gates Wider Than 17'	07/03/02				
FG 6	Chain Link Fence	07/03/02				
	Grates, Frames, and Trash Racks (GF)					
GF 1	Manhole Frame And Grated Cover	07/03/02				
GF 2	Manhole Frame And Solid Cover	07/03/02				
GF 3	Rectangle Grate & Frame					
GF 4	Directional Flow Grate & Frame	07/03/02				
GF 5	Solid Cover & Frame	07/03/02				
GF 6	Manhole Steps	07/03/02				
GF 7	Standard Screw Grate & Frame	07/03/02				
GF 8	2' x 2' Grate & Frame	07/03/02				
GF 9	28" x 24" Directional Flow and Frame	07/03/02				
GF 10	Standard Trash Racks 90E X-ing L	07/03/02				
GF 11	Standard Trash Racks	07/03/02				
GF 12	Standard Trash Racks	07/03/02				
	General Road Work (GW)	I				
GW 1	Raised Median and Plowable End Section	12/19/02				
GW 2	Concrete Curb and Gutter	06/26/03				
GW 3	Concrete Curb and Gutter Details	07/03/02				
GW 4	Concrete Driveways and Sidewalks	07/03/02				

U	NUMBER	TITLE	CURRENT
	GW 5	Pedestrian Access	DATE 02/27/03
	GW 6	Right-of-Way Marker	07/03/02
	GW 7	Newspaper and Mailbox Stop Layout	07/03/02
	GW 8	Newspaper and Mailbox Support Hardware	07/03/02
	GW 9	Delineation Hardware	07/03/02
	GW 10	Delineation Application	07/03/02
		Paving (PV)	
	PV 1	Joints for Highways with Concrete Traffic Lanes and Shoulders	07/03/02
	PV 2	Pavement/Approach Slab Details	12/19/02
	PV 3	Concrete Pavement Details for Urban and Interstate	07/03/02
	PV 4	Concrete Pavement Details for Urban and Interstate	07/03/02
	PV 5	Urban Concrete Pavement Details	07/03/02
	PV 6	Rumble Strips	07/03/02
	PV 7	Rumble Strips - Typical Application	07/03/02
		Signals (SL)	1
	SL 1	Traffic Signals Mast Arm Pole and Luminaire Extension	07/03/02
	SL 2	Traffic Signals Mast Arm Detail 25' Thru 65'	07/03/02
	SL 3	Underground Service Pedestal Details	07/03/02
	SL 4	Traffic Signals Mast Arm Pole Foundation	07/03/02
	SL 5	Breakaway Post Mounted Traffic Signal Pole	07/03/02
	SL 6	Power Source Details	07/03/02
	SL 7	Span Wire Signal Pole Detail	07/03/02
	SL 8	Signal Head Details	07/03/02
	SL 9	Pedestrian Signal Assembly	07/03/02
	SL 10	Controller Base Details	07/03/02
	SL 11	Traffic Signals Loop Detector Detail	07/03/02
	SL 12	Junction Box Details	07/03/02
	SL 13	Traffic Counting Loop Detector Detail	12/19/02
	SL 14	Light Pole Breakaway Base	07/03/02

U	NUMBER	TITLE	CURRENT DATE			
	SL 15	Luminaire Breakaway Base Detail	07/03/02			
	SL 16	Single Transformer Substation Details	07/03/02			
	SL 17	07/03/02				
	SL 18	Light Pole Foundation Extension	07/03/02			
		Signs (SN)				
	SN 1	SN 1 Bridge Load Limit Signs				
	SN 2	Flashing School Sign	12/19/02			
	SN 3	Overhead School Flasher	07/03/02			
	SN 4	Flashing Stop Sign	12/19/02			
	SN 5	Typical Installation for Milepost Signs	12/19/02			
	SN 6	Not Used				
	SN 7	Placement of Ground Mounted Signs	07/03/02			
	SN 8	Ground Mounted Timber Sign Post (P1)	12/19/02			
	SN 9	Ground Mounted Tubular Steel Sign Post (P2)	07/03/02			
	SN 10	Ground Mounted Square Steel Sign Post (P3)	07/03/02			
	SN 11	Slipbase Ground Mounted Tubular Steel Sign Post (P4)	07/03/02			
	SN 12A	Ground Mounted Sign Installation Details	07/03/02			
	SN 12B	Ground Mounted Sign Installation Details	04/24/03			
	SN 12C	SN 12C Ground Mounted Sign Installation Details				
		Striping (ST)				
	ST 1	12/19/02				
	ST 2	Freeway Turn Around Markings	07/03/02			
	ST 3	Typical Pavement Markings	07/03/02			
	ST 4	Crosswalks, Parking and Intersection Approaches	07/03/02			
	ST 5	T 5 Painted Median & Auxiliary Lane Details				
	ST 6	Passing/Climbing Lanes Traffic Control				
	ST 7	ST 7 Pavement Markings & Signs at Railroad Crossing				
	ST 8	Plowable Pavement Markers	07/03/02			

U	NUMBER	TITLE	CURRENT				
		Structures and Walls (SW)	DATE				
	SW 1A	Welded End Guard Unit	07/03/02				
	SW 1B	Precast Concrete Cattle Guard	07/03/02				
	SW 2	Noise Wall Placement Area	07/03/02				
	SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/02				
	SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/02				
	SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/02				
	SW 4B	Precast Concrete Retaining/Noise Wall 2 of 2	07/03/02				
		Traffic Control (TC)					
	TC 1A	Construction Zone Channelization Devices	07/03/02				
	TC 1B	Construction Zone Signing	07/03/02				
	TC 2A	Traffic Control General	07/03/02				
	TC 2B	Traffic Control General	07/03/02				
	TC 3	Traffic Control Project Limit Signing	07/03/02				
	TC 4	Traffic Control Urban Intersections With Roadways Under 50 MPH	07/03/02				
	TC 5	Traffic Control Urban Intersections With Roadways Under 50 MPH	07/03/02				
	TC 6	Traffic Control Pedestrian Routing	07/03/02				
	TC 7	Traffic Control Road Closed, Detour	07/03/02				
	TC 8	Traffic Control Lane Closure	07/03/02				
	TC 9	Traffic Control Multilane Closure	07/03/02				
	TC 10	Traffic Control Expressway And Freeway Crossover/Turn-Around	07/03/02				
	TC 11	Traffic Control Exit Ramp Gore	07/03/02				
	TC 12	Traffic Control Entrance Ramp Gore	07/03/02				
	TC 13	Traffic Control Shoulder-Haul Road	07/03/02				
	TC 14	Traffic Control Flagging Operation	07/03/02				
	TC 15	TC 15 Traffic Control 2 Lane/ 2 Way Seal Coat With Cover Material					
	TC 16	Traffic Control Pavement Marking	07/03/02				

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

DWG. NO.	DESCRIPTION	DATE
	ADVANCED TRAFFIC MANAGEMENT SYSTEM (AT)
AT 1	LEGEND SHEET	07-03-02
AT 2	RAMP METER DETAILS	07-03-02
AT 3	RAMP METER SIGN PANEL	07-03-02
AT 4	TYPICAL RAMP METER SIGNAL HEAD MOUNTING	07-03-02
AT 5	LOOP INSTALLATION	07-03-02
AT 6	CONDUIT DETAILS	07-03-02
AT 7	POLYMER-CONCRETE JUNCTION BOX DETAILS	04-24-03
AT 8	ATMS CABINET W/120V DISCONNECT	07-03-02
AT 9	ATMS CAB WITH STEPDOWN TRANSFORMER	07-03-02
AT 10	DOMED CCTV DETAILS	07-03-02
AT 11	CCTV POLE DETAIL	07-03-02
AT 12	CCTV POLE FOUNDATION FOR DEDICATED CCTV POLE	07-03-02
AT 13	120V VMS CAB FOUNDATION DETAILS	07-03-02
AT 14	WEIGHT IN MOTION PIEZO DETAIL	07-03-02
	BARRIERS (BA)	
BA 14	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	12-19-02
BA 1E	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	12-19-02
BA 2	PRECAST CONCRETE HALF BARRIER STANDARD SECTION	07-03-02
ва з	CAST IN PLACE CONSTANT SLOPE BARRIER	12-19-02
BA 4	BEAM GUARDRAIL HARDWARE	07-03-02
BA 44	GUARDRAIL TRANSITION	07-03-02
BA 4E	BEAM GUARDRAIL INSTALLATIONS	12-19-02
BA 40	BEAM GUARDRAIL ANCHOR TYPE 1	12-19-02
BA 5	TRAFFIC CONTROL CABLE	07-03-02
	CATCH BASINS AND CLEANOUTS (CB)	
CB 1	STANDARD CATCH BASIN	07-03-02
CB 2	CURB INLET CATCH BASIN	04-24-03
CB 3	STANDARD TRANSITION CONCRETE LINED DITCH TO PIPE OR DIVERSION BOX	07-03-02
CB 4	SOLID COVER FOR STD DWG DB 1 MS-18 LOADING	07-03-02
CB 5	STANDARD SCREW GATE AND FRAME	07-03-02
CB 64	STANDARD DROP INLET DETAILS GENERAL NOTES AND INSTAL DETAIL	-AJ HONØ3-Ø2
CB 6E	CTANDADD CATCH DACIN AND CLEANOUT DOV DOOD INLET TYP	⁼ ØA"-Ø3-Ø2
CB 60	CTANDADD CATCH DACIN AND CLEANOLT DOV DOOD INLET TYP	= "øB7"-ø3-ø2
CB 6E	CTANDARD CATCH BACIN AND CLEANOUT BOY DROP INLET TYPE	"g ^C 7"-Ø3-Ø2
CB 6E	STANDARD CATCH BASIN AND CLEANOUT BOY DROP INLET	07-03-02
CB 6F	OTANIBABB CATOU BACKU AND OLEANOUT BOW BROD AND ST	07-03-02
CB 60	CTANDADD CATCH DACIN AND CLEANOUT DOV DOOD INLET TYD	"b"-ø3-ø2
CB 6+	CTANDADD CATCH BACIN AND CLEANOUT BOY DOOD INLET TYPE	"@P7" - Ø3 - Ø2
CB 7	STANDARD CURB AND GUTTER DROP INLET	07-03-02
CB 84	DOUBLE CATCH BASIN	07-03-02
CB 8E	DOUBLE CATCH BASIN	07-03-02

	DWG. NO.	DESCRIPTION	DATE	
	CB 9A	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION & LAYOUT	07-03-02	
	CB 9B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAIL	SØ7-Ø3-Ø2	
	CB 9C	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 18" TO 42" RCP 12" TO 48" (MØ7-03-02	
	CB 9D	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 48" TO 66" RCP 60" TO 78"C		
	CB 1ØA	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION & LA		
	CB 1ØB	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAIL		
	CB 1ØC	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 42° TO 60° RCP 48° TO 72°		
	00 100	SCHEDOLE OF INSTALLATION 42 TO 60 NCF 46 TO 72	PIMIL	
		CRASH CUSHIONS (CC)		
	CC 1	CRASH CUSHION MARKINGS	Ø7-Ø3-Ø2	
	CC 2	CRASH CUSHION DRAINAGE DETAILS GUIDELINE A	Ø7-Ø3-Ø2	
	CC 3	CRASH CUSHION DRAINAGE DETAILS GUIDELINE B	Ø7-Ø3-Ø2	
	CC 4	DETAIL FOR PLACEMENT CRASH CUSHIONS TYPE A, B & D	Ø7-Ø3-Ø2	
	CC 5	GRADING & PLACEMENT DETAIL CRASH CUSHION TYPE C	07-03-02	
	CC 6	CRASH CUSHION TYPE E SAND BARREL DETAILS	12-19-02	
	CC 7	GRADING & INSTALLATION DETAILS CRASH CUSHION TYPE F	04-24-03	
	CC 8	GRADING & INSTALLATION DETAILS CRASH CUSHION TYPE G	04-24-03	
	CC 9A	GRADING & INSTALLATION DETAILS CRASH CUSHION TYPE H	04-24-03	
	CC 9B	GRADING & INSTALLATION DETAILS CRASH CUSHION TYPE H	04-24-03	
		SINDING & INCHIEEM FOR BEINIES SINON SOSTION THE H	D 1 L 1 D 0	
		DIVERSION BOXES (DB)		
	DB 1A	STANDARD DIVERSION BOX/COVER PLATE/GRATING FOR	Ø7-Ø3-Ø2	
	DB 1B	18"DIA. OR 24"DIA.PIPE STANDARD DIVERSION BOX HINGED LID DETAIL FOR 18" DIA	OR7240°3 DØA?	P
	DB 1C	STANDARD DIVERSION BOX BICYCLE-SAFE GRATING DETAILS	F987 - Ø3 - Ø2	
	DB 1D	18"DIA. OR 24"DIA.PIPE STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR	07-03-02	
	DB 1E	18"DIA. OR 24"DIA.PIPE STANDARD_DIVERSION_BOX THREE GATE BOX SECTIONS FOR	07-03-02	
	DB 1F	18"DIA. OR 24"DIA.PIPE STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR	Ø7-Ø3-Ø2	
	DB 2A	18"DIA, OR 24"DIA.PIPE STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS,	07-03-02	
	DB 2B	BOTTOM SLAB, WALLS AND APRON DETAIL STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, QUAI	IT 1077 E 8 3 - 02	
	DB 2C	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS,	07-03-02	
_	DB 2D	HAND SLIDE GATE DETAILS STANDARD DIVERSION BOX TYPE "G" HAND SLIDE GATE DET		
	DB 2E	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLAT		
_	DB 2F	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLAT		
	DB 2G	TYPE "A" DETAILS TYPE II PLAN STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "E		
	DB 2H	STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "B		0
	DB 3A	STANDARD DIVERSION BOX WITH MANHOLE COVER	Ø7-Ø3-Ø2	
_	DB 3B	SITUATION & LAYOUT STANDARD DIVERSION BOX WITH MANHOLE COVER UP TO 42*	RGP7 AND3 - 012	
_	DB 3C	UP TO 54" CMP STANDARD DIVERSION BOX WITH MANHOLE COVER 48"TO 72" 60"TO 84" CMP	R@P7 AND3 - 0/2	
_	DB 30	60"TO 84" CMP		
_				
-				

	DWI NO.		DESCRIPTION	DATE
			DESIGN DRAWINGS (DD)	
	DD	1	SUPERELEVATION AND WIDENING	Ø6-26-Ø3
	DD	2		
	DD	3	CLIMBING LANES	Ø6-26-Ø3
	DD	4		
	DD	5		
	D D	6		
	DD	7		
	DD	8	STRUCTURAL GEOMETRIC DESIGN STANDARDS CLEARANCES	06-26-03
	DD	9	STRUCTURAL GEOMETRIC DESIGN STANDARDS	06-26-03
	DD	10	RAILROAD CLEARANCES AT HIGHWAY OVERPASS STRUCTURES	06-26-03
	DD	1 1	RURAL MULTI LANE HIGHWAYS OTHER THAN FREEWAYS	06-26-03
	DD	12		Ø6-26-Ø3
	DD	1 3	FRONTAGE AND ACCESS ROADS (UNDER 50 ADT)	Ø6-26-Ø3
Н				
Н				
Н				
			DRAINAGE (DG)	
	D.C.	1		07-02-02
	DG	2	FILL HEIGHT FOR METAL PIPE (STEEL)	07-03-02 07-03-02
PE	D G	3	FILL HEIGHT FOR METAL PIPE (ALUMINUM) MAXIMUM FILL HEIGHT AND END SECTIONS FOR HDPE AND PVC	PII2ES 9 - 02
_	DG	4	PIPE CULVERTS MINIMUM COVER	12-19-02
	DG	5	PLASTIC PIPE, METAL PIPE OR PIPE ARCH CULVERT BEDDING	Ø7-Ø3-Ø2
	DG	6	PRECAST CONCRETE PIPE CULVERT	Ø7 - Ø3 - Ø2
Н	DG	7	GASKETTED JOINTS OR COUPLINGS BANDS FOR C.M.P.	Ø7-Ø3-Ø2
	DG	8	METAL CULVERT END SECTION	07-03-02
	DG	9	MISCELLANEOUS PIPE DETAILS	Ø7-Ø3-Ø2
			THE BETTIES	0, 00 02
			ENVIRONMENTAL CONTROLS (EN)	
	ΕN	1	TEMPORARY EROSION CONTROL (CHECK DAMS)	Ø7-Ø3-Ø2
	EN	2	TEMPORARY EROSION CONTROL (SILT FENCE)	Ø4-24-Ø3
	EN	3		BEØRM) Ø3 - Ø2
	ΕN	4	TEMPORARY EROSION CONTROL (DROP INLET BARRIERS)	12-19-02
	ΕN	5	TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND CURB INLET BARRIER)	07-03-02
			ASEDITIENT THAT AND COND TREET DHINTER/	_
			FENCE AND GATES (FG)	
	FG	1 A	RIGHT OF WAY FENCE AND GATES (WOOD POST)	07-03-02
	FG	1 B	RIGHT OF WAY FENCE AND GATES (WOOD POST)	07-03-03
	FG	2 A	RIGHT OF WAY FENCE AND GATES (METAL POST)	07-03-02
	FG	2 B	RIGHT OF WAY FENCE AND GATES (METAL POST)	07-03-02
	FG	3	SWING GATES TYPE 1 FOR GATES LESS THAN 17'	07-03-02
	FG	4	DEER GATES	07-03-02
	FG	5	SWING GATES TYPE II FOR GATES WIDER THAN 17'	07-03-02
	FG	6	CHAIN LINK FENCE	07-03-02

DRAWING SHEET								TANDARD DRAWING TITLE		
		STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		REVIEWED AND CHECKED	JUL _	HECKED AND APPROVAL		STANDARD ENGINEER	
	1		<u>ε</u>			JUN.26,2003	DATE	JUN.26.2003	1	
	02/19/03	04/24/03	06/26/03						NO. DATE	
	02/19/03 B.A. CHANGE 1	2 04/24/03 B.A. CHANGE 3	3 Ø6/26/Ø3 B.A. CHANGE 4						APPR.	
									REMARKS	

STD DWG

1-B

MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

DW NO	/G.	DESCRIPTION	DATE
		GRATES, FRAMES AND TRASH RACKS (GF)	
GF	1	MANHOLE FRAME AND GRATED COVER	07-03-02
GF	2	MANHOLE FRAME AND SOLID COVER	07-03-02
GF	3	RECTANGULAR GRATE & FRAME	07-03-02
GF	4	DIRECTIONAL FLOW GRATE & FRAME	07-03-02
GF	5	SOLID COVER & FRAME	07-03-02
GF	6	MANHOLE STEPS	07-03-02
GF	7	STANDARD SCREW GATE & FRAME	07-03-02
GF	8	2' X 2' GATE AND FRAME	07-03-02
GF	9	28" X 24" DIRECTIONAL FLOW GRATE AND FRAME	07-03-02
GF	10	STANDARD TRASH RACKS 90 ANGLE X-ING L	07-03-02
GF	1 1	STANDARD TRASH RACKS	07-03-02
GF	12	STANDARD TRASH RACKS	07-03-02
$oxed{oxed}$			
		GENERAL ROAD WORK (GW)	
G V	V 1	RAISED MEDIAN AND PLOWABLE END SECTION	12-19-02
G V	V 2	CONCRETE CURB AND GUTTER	Ø6-26-Ø3
G V	V 3	CONCRETE CURB AND GUTTER DETAILS	07-03-02
G V	V 4	CONCRETE DRIVEWAYS AND SIDEWALKS	07-03-02
G V	V 5	PEDESTRIAN ACCESS	02-27-03
G V	√ 6	RIGHT OF WAY MARKER	07-03-02
G V	V 7	NEWSPAPER AND MAILBOX STOP LAYOUT	07-03-02
G V	V 8	NEWSPAPER AND MAILBOX SUPPORT HARDWARE	07-03-02
G V	٧9	DELINEATION HARDWARE	07-03-02
G V	V 10	DELINEATION APPLICATION	07-03-02
		PAVING (PV)	
P۷	1	JOINTS FOR HIGHWAYS WITH CONCRETE TRAFFIC LANES AND S	HOQUZDEQR\$ - 02
PV	2	PAVEMENT/APPROACH SLAB DETAILS	12-19-02
P۷	3	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	07-03-02
PV	4	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	07-03-02
PV	5	URBAN CONCRETE PAVEMENT DETAILS	07-03-02
PV	6	RUMBLE STRIPS	07-03-02
PΥ	7	RUMBLE STRIPS -TYPICAL APPLICATION	07-03-02
Ш			
oxdot		SIGNALS (SL)	
SL	1	TRAFFIC SIGNALS MAST ARM POLE AND LUMINAIRE EXTENSION	07-03-02
SL	2	TRAFFIC SIGNALS MAST ARM DETAIL 25' THRU 65'	07-03-02
SL	3	UNDERGROUND SERVICE PEDESTAL DETAIL	07-03-02
SL	4	TRAFFIC SIGNALS MAST ARM POLE FOUNDATION	07-03-02
SL	5	BREAKAWAY POST MOUNTED TRAFFIC SIGNAL POLE	07-03-02
SL	6	POWER SOURCE DETAILS	07-03-02
SL	7	SPAN WIRE SIGNAL POLE DETAIL	07-03-02
SL	8	SIGNAL HEAD DETAILS	07-03-02

	WG. O.	DESCRIPTION	DATE
SI	_ 9	PEDESTRIAN SIGNAL ASSEMBLY	07-03-02
SI	10	CONTROLLER BASE DETAIL	07-03-02
SI	_ 11	TRAFFIC SIGNALS LOOP DETECTOR DETAIL	07-03-02
SI	_ 12	JUNCTION BOX DETAILS	07-03-02
SI	_ 13	TRAFFIC COUNTING LOOP DETECTOR DETAIL	12-19-02
SI	_ 14	LIGHT POLE BREAKAWAY BASE	07-03-02
SI	_ 15	LUMINARIE BREAKAWAY BASE DETAIL	07-03-02
SI	_ 16	SINGLE TRANSFORMER SUBSTATION DETAILS	07-03-02
SI	_ 17	LIGHT POLE ANCHOR BASE	07-03-02
SI	_ 18	LIGHT POLE FOUNDATION EXTENSION	07-03-02
┸			
┸		SIGNS (SN)	
SI	N 1	BRIDGE LOAD LIMITS SIGNS	07-03-02
SI	N 2	FLASHING SCHOOL SIGN	12-19-02
SI	V 3	OVERHEAD SCHOOL FLASHER	07-03-02
SI	٧ 4	FLASHING STOP SIGN	12-19-02
SI	۷ 5	TYPICAL INSTALLATION FOR MILEPOST SIGNS	12-19-02
12	٧ 6	NOT USED	07-03-02
12	٧ 7	PLACEMENT OF GROUND MOUNTED SIGNS	07-03-02
+	N 8	GROUND MOUNTED TIMBER SIGN POST (P1)	12-19-02
+	۷ 9	GROUND MOUNTED TUBULAR STEEL SIGN POST (P2)	07-03-02
+	V 10	GROUND MOUNTED SQUARE STEEL SIGN POST (P3)	07-03-02
+	N 11	SLIPBASE GROUND MOUNTED TUBULAR STEEL SIGN POST (P-4	
+	N 12A	GROUND MOUNTED SIGN INSTALLATION DETAILS	07-03-02
+	N 12B	GROUND MOUNTED SIGN INSTALLATION DETAILS	04-24-03
Si	N 12C	GROUND MOUNTED SIGN INSTALLATION DETAILS	07-03-02
		STRIPING (ST)	
SI	Г 1	OBJECT MARKERS "T" INTERSECTION & PAVEMENT	12-19-02
+	· · · · · · · · · · · · · · · · · · ·	TRANSITION GUIDANCE FREEWAY TURN AROUND MARKINGS	07-03-02
ST	Г 3	TYPICAL PAVEMENT MARKINGS	07-03-02
_	Г 4	CROSSWALKS, PARKING AND INTERSECTION APPROACHES	07-03-02
SI	T 5	PAINTED MEDIAN & AUXILIARY LANE DETAILS	07-03-02
ST	Г 6	PASSING/CLIMBING LANES TRAFFIC CONTROL	07-03-02
S1	Г 7	PAVEMENT MARKINGS AND SIGNS AT RAILROAD CROSSING	12-19-02
ST	Г 8	PLOWABLE PAVEMENT MARKERS	07-03-02
T			
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T			

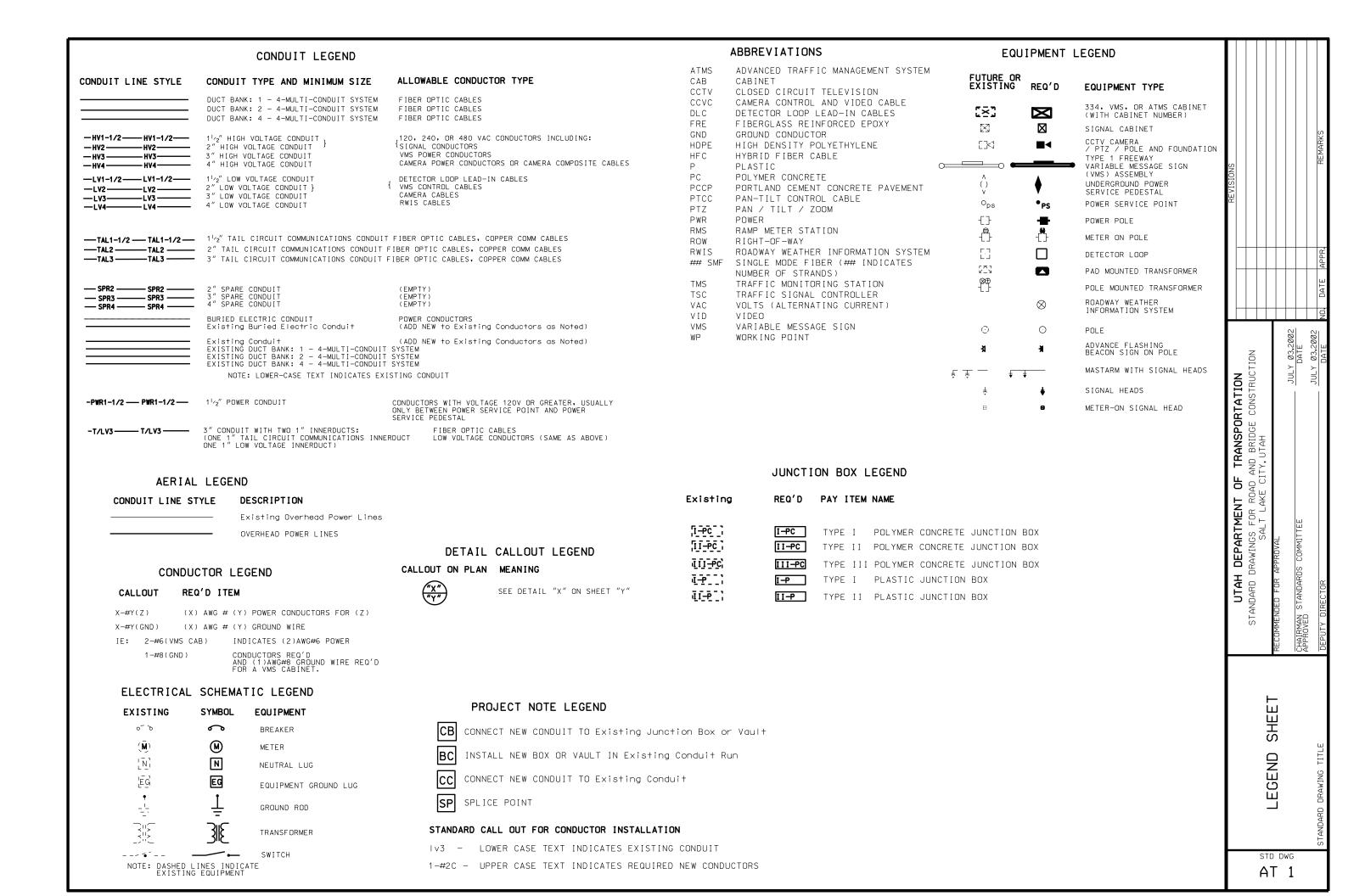
	DW NO.		DESCRIPTION	DATE
寸			STRUCTURES AND WALLS (SW)	
	SW	1 A	WELDED END GUARD UNIT	07-03-02
	SW	1 B	PRECAST CONCRETE CATTLE GUARD	07-03-02
	SW	2	NOISE WALL PLACEMENT AREA	07-03-02
\dashv	SW	3 A	PRECAST CONCRETE NOISE WALL 1 OF 2	12-19-02
	SW	3 B	PRECAST CONCRETE NOISE WALL 2 0F 2	12-19-02
	SW	4 A	PRECAST CONCRETE RETAINING/NOISE WALL 1 OF 2	12-19-02
	SW	4 B	PRECAST CONCRETE RETAINING/NOISE WALL 2 OF 2	07-03-02
			TRAFFIC CONTROL (TC)	
	TC	1 A	CONSTRUCTION ZONE CHANNELIZATION DEVICES	07-03-02
	TC	1 B	CONSTRUCTION ZONE SIGNING	07-03-02
	TC	2 A	TRAFFIC CONTROL GENERAL	07-03-02
_]	TC	2B	TRAFFIC CONTROL GENERAL	07-03-02
	TC	3	TRAFFIC CONTROL PROJECT LIMIT SIGNING	07-03-02
	ТC	4	TRAFFIC CONTROL URBAN INTERSECTION WITH ROADWAYS UNDER 50 MPH	07-03-02
_1	TC	5	TRAFFIC CONTROL URBAN INTERSECTION WITH ROADWAYS UNDER 50 MPH	07-03-02
	TC	6	TRAFFIC CONTROL PEDESTRIAN ROUTING	07-03-02
	TC	7	TRAFFIC CONTROL ROAD CLOSURE, DETOUR	07-03-02
	TC	8	TRAFFIC CONTROL LANE CLOSURE	07-03-02
	TC	9	TRAFFIC CONTROL MULTILANE CLOSURE	07-03-02
	TC	1 Ø	TRAFFIC CONTROL EXPRESSWAY AND FREEWAY CROSSOVER/ TURN AROUND	07-03-02
	TC	1 1	TRAFFIC CONTROL EXIT RAMP GORE	07-03-02
	TC	12	TRAFFIC CONTROL ENTRANCE RAMP GORE	07-03-02
	TC	13	TRAFFIC CONTROL SHOULDER-HAUL ROAD	07-03-02
	TC	1 4	TRAFFIC CONTROL FLAGGING OPERATION	Ø7-Ø3-Ø2
	TC	15		MAØFRIAB-Ø2
_	TC	16	TRAFFIC CONTROL PAVEMENT MARKING	07-03-02
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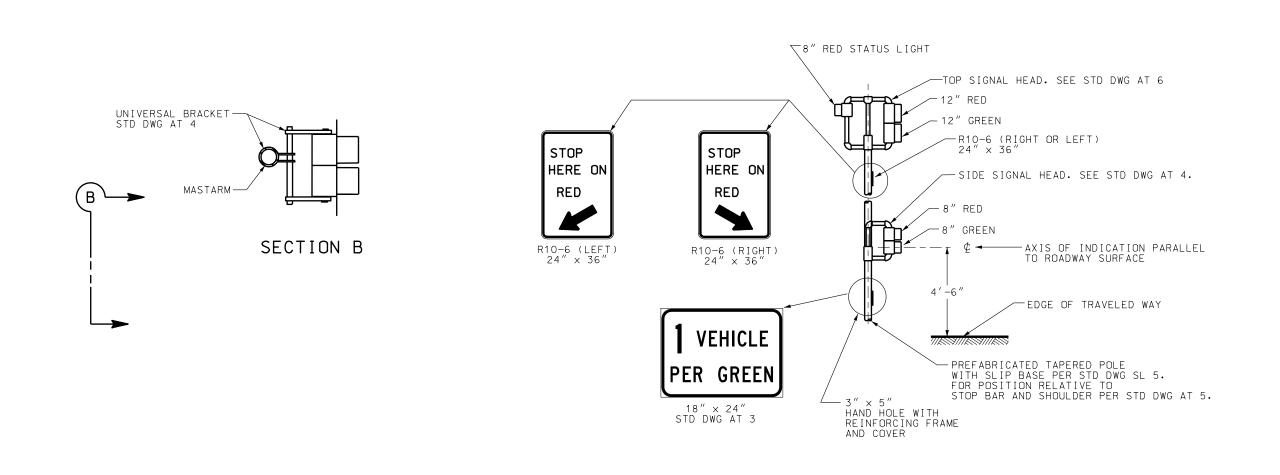
	KIRIIUN 1 02/19/03 B.A. CHANGE 1	ONSTRUCTION 2 03/24/03 0.4 CHANGE 2	3 04/24/03 B.A. CHANGE 3	4 Ø6/26/Ø3 B.A. CHANGE 4			JUN.26,2003	DATE	JUN.26.2003	DATE NO. DATE APPR.	
1000140H LO H111111040LO4H-	CIAH DEFAKIMENI OF IKANSFOKIALION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		REVIEWED AND CHECKED			CHECKED AND APPROVAL		STANDARD ENGINEER	
STANDARD DRAWING INDEX SHEET											

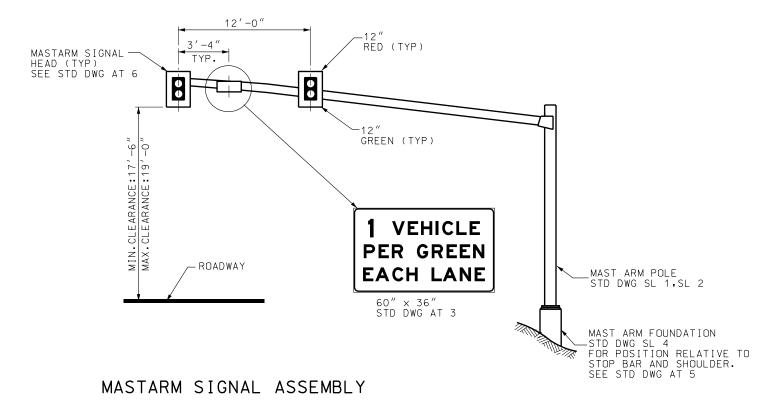
STD DWG

1-C

MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

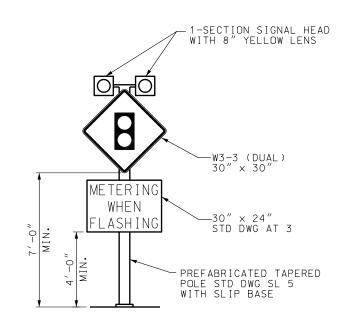






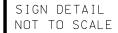
RAMP METER SIGNAL ASSEMBLY

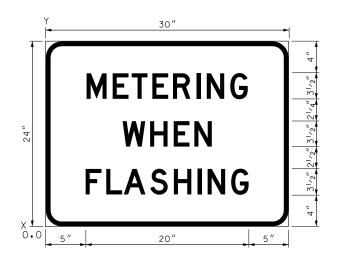
WITH ENFORCEMENT INDICATION



ADVANCE FLASHING BEACON ASSEMBLY

				32			DATE NO. DATE APPR. REMARKS
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	ı	RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE	C00C.50 Y 111.	DEPUTY DIRECTOR DATE
							STANDARD DRAWING TITLE
	s ⁻	T	DI	√G 2			





WIDTH × HEIGHT	30" × 24"
BORDER WIDTH	⁵ / ₈ "
CORNER RADIUS	2"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK



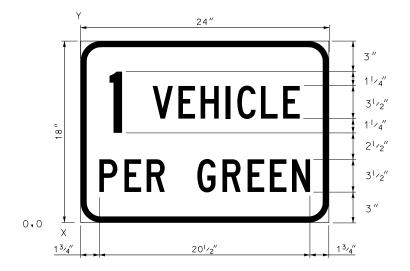
WIDTH × HEIGHT	60" x 36"
BORDER WIDTH	5 _{/8} "
CORNER RADIUS	2"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

COORDINATES ARE TO LOWER LEFT CORNERS

Y FONT	LETTER PUSITIONS (X)											HT LEN	
15 ¹ / ₂	М	Е	T	Е	R	ı	N	G					31/2
D	5	81/4	10 ⁵ / ₈	13 ¹ / ₈	15 ³ / ₄	18 ⁵ /8	20	23					20
93/4	W	Н	Е	N									31/2
D	91/2	13	15 ³ / ₄	181/4									11
4	F	L	Α	S	Н		N	G					31/2
D	5	71/2	9 ⁵ /8	13	15 ³ / ₄	18 ³ / ₄	20	23					201/4

COORDINATES	ARE	TO	LOWER	LEFT	CORNERS
	LE	TTE	R POSI	TIONS	(X)

Y FONT	T LETTER POSITIONS (X)											HT LEN	
241/2	V	Ε	Н		C	L	E						6
EM	16 ¹ / ₄	23	28 ⁵ /8	35	37 ³ / ₄	43 ³ / ₄	491/4						37 ¹ / ₂
231/2	1												6
EM	6 ¹ /8												21/2
141/2	Р	Е	R	G	R	Е	Е	N					6
EM	41/4	10 ⁵ /8	16 ¹ / ₄	27	33 ¹ / ₄	391/2	451/4	50 ³ / ₄					51 ¹ / ₄
41/2	Е	Α	C	Ι	١	Α	N	E					6
EM	4	91/4	16 ¹ / ₂	22 ¹ /2	33 ¹ /8	38	451/4	51 ¹ / ₂					52



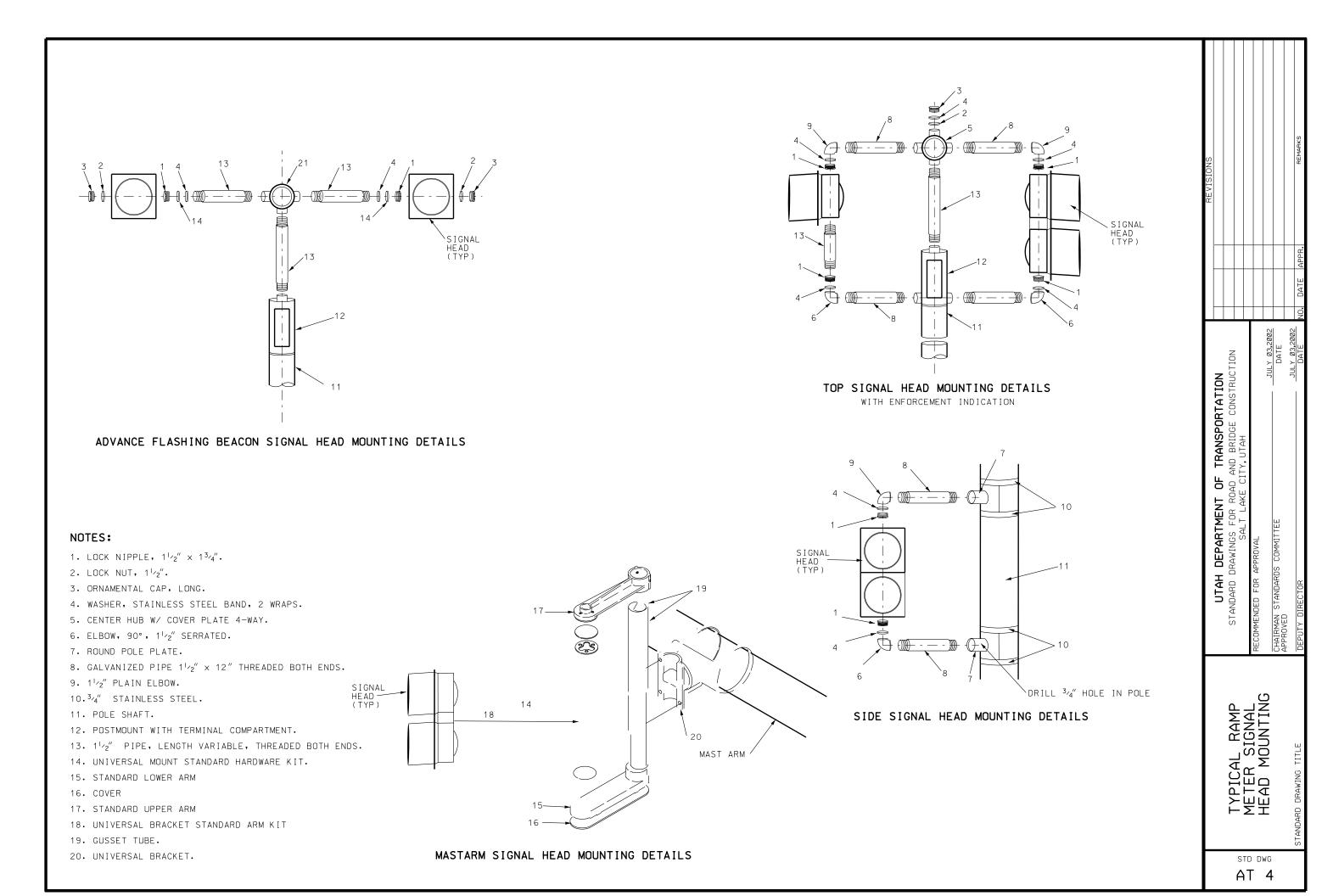
WIDTH × HEIGHT	24" × 18"
BORDER WIDTH	5/8"
CORNER RADIUS	2"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

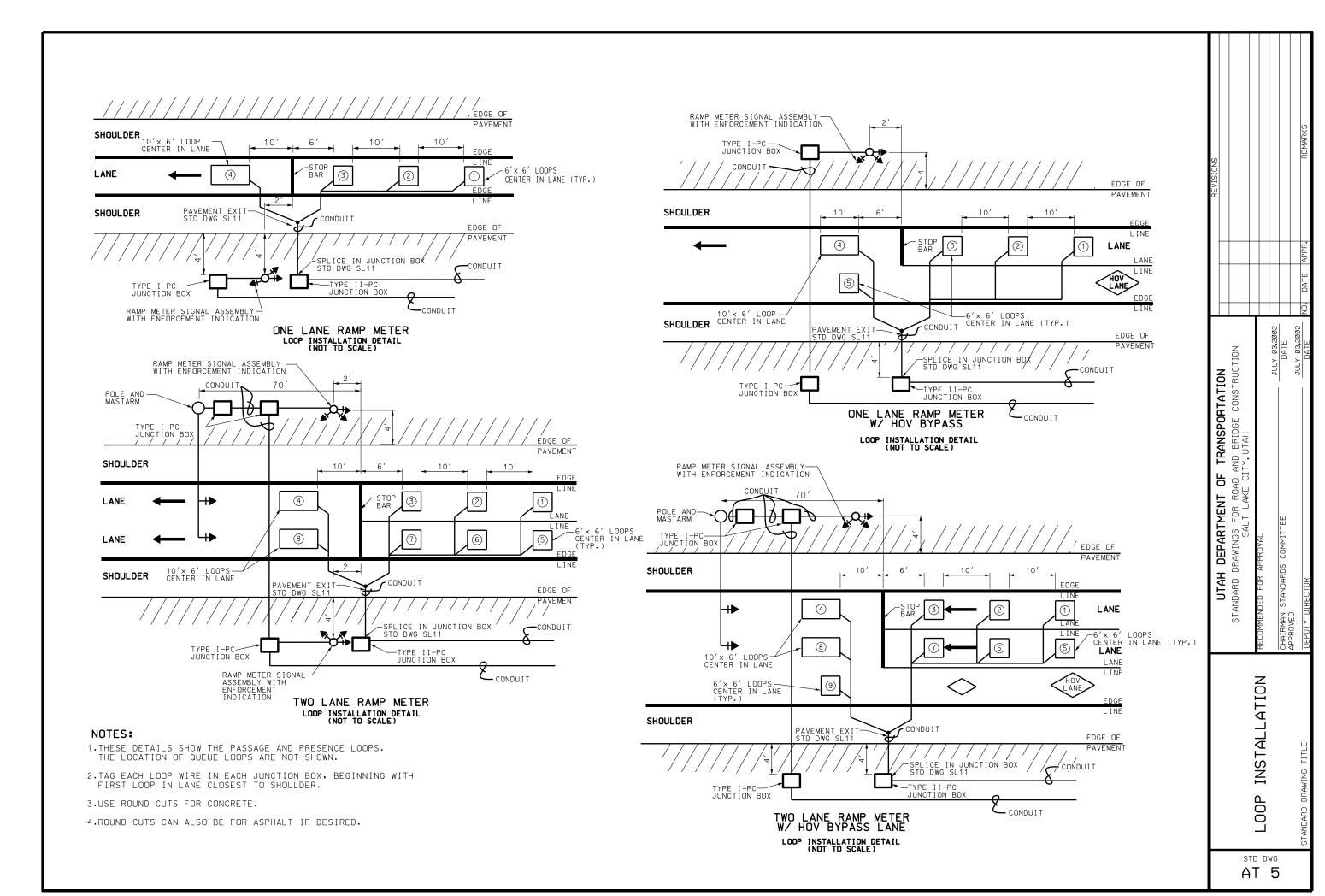
COORDINATES ARE TO LOWER LEFT CORNERS

Y FONT		LETTER POSITIONS (X)												HT LEN
10 ¹ / ₄	٧	Ħ	Н		С	L	Е							31/2
С	7	9 ³ /8	11 ⁵ / ₈	14	15 ¹ /8	17 ³ /8	19 ⁵ /8							141/4
9	1													6
С	2 ³ / ₄													11/4
3	Р	E	R	G	R	E	Ē	N						31/2
С	13/4	41/4	6 ³ / ₈	11 ¹ / ₄	13 ³ / ₄	16 ¹ /8	18 ¹ / ₄	20 ³ / ₈						20 ¹ / ₂

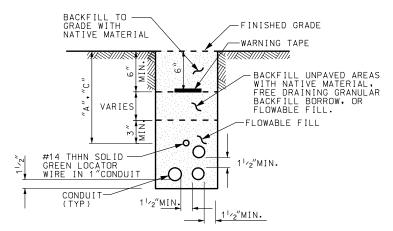
RAMP METER SIGN PANEL

STD DWG

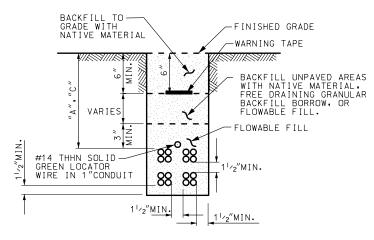




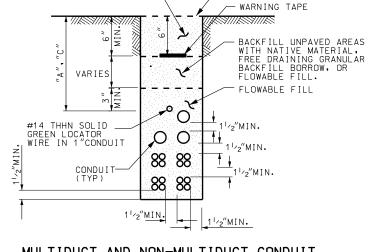
TRENCHED CONDUIT



NON-MULTIDUCT CONDUIT



MULTIDUCT CONDUIT

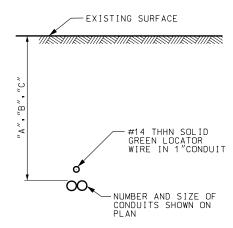


-FINISHED GRADE

BACKFILL TO-GRADE WITH

NATIVE MATERIAL

MULTIDUCT AND NON-MULTIDUCT CONDUIT



CONDUIT BORED, JACKED, OR DRILLED

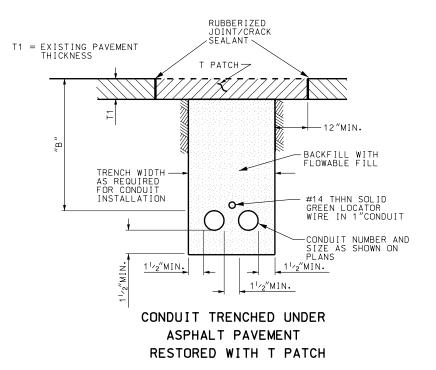


TABLE 1. T PATCH RESTORATION

EXISTING ASPHALT PAVEMENT THICKNESS (T1) IN INCHES	RESTORATION T PATCH THICKNESS IN INCHES
0 - 31/2	31/2
31/2 - 6	MATCH EXISTING DEPTH
6 OR GREATER	6

TABLE 2. CONDUIT DEPTH

	DEPTH IN INCHES	AREA								
Α	24	PAVED DITCHES, UNLINED DITCHES, GUTTERS, SIDEWALK								
В	36	HIGHWAY RIGHT OF WAY UNDER ASPHALT PAVEMENT SURFACE								
С	60	W/IN 20f+ OF PAVEMENT EDGE WHERE SIGNS OR DELINEATORS PRESENT								

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah

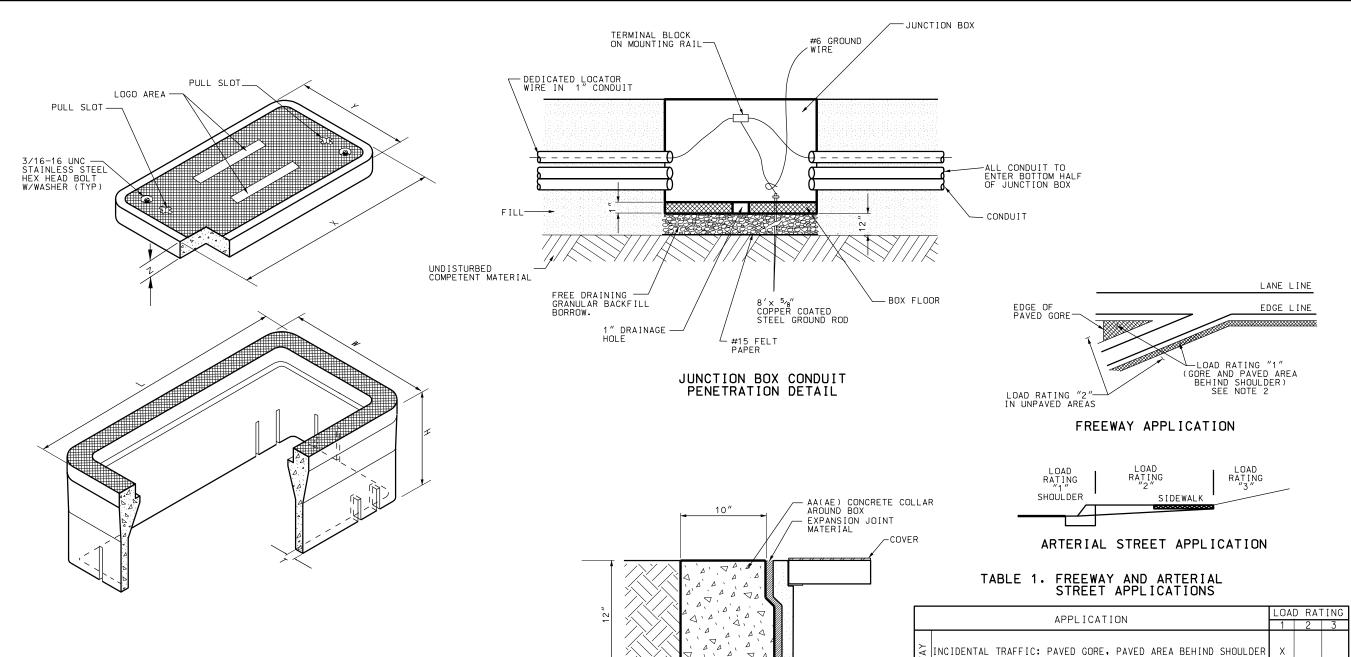
CHAIRMAN APPROVED

S

DETAIL

CONDUIT

STD DWG AT 6



GRANULAR BACKFILL BORROW

BOX AND LID DIMENSIONS

BOX TYPE	"L" inch	"W" inch	"H" inch	"T" inch	"X" inch	"Y" inch	"Z" inch
I-PC	25	16	24	11/2	231/4	13 ³ / ₄	2
II-PC	37 ⁵ /8	26	24	11/2	35 ⁵ /8	24	3
III-PC	49 ⁵ /8	321/8	24	2	47 ⁵ /8	30 ¹ /8	3

JUNCTION BOX CONCRETE COLLAR DETAIL

─JUNCTION BOX

LOAD RATING	COVER ENCLOSURE	DESIGN LOAD (Ib)	TEST LOAD (Ib)	TEST AREA (inch)
1	HS20	21000	45000	10 × 20
2	INCIDENTAL TRAFFIC (10K)	10000	22500	10 × 20
3	POLYMER CONCRETE	8000	12000	10 × 10

	TABLE 2.	JUNCTION	BOX LID STATIC
BOX CONCRETE COLLAR DETAIL		VERTICAL	LOAD RATING

ALL OTHER AREAS

PARKWAY/SIDEWALK

PAVED SHOULDER OUT OF TRAFFIC

NON-RAISED MEDIAN, INDUSTRIAL/COMMERCIAL DRIVEWAYS

BEHIND SIDEWALK, NOT WHEEL LOADING ACCESSIBLE

VERTICAL LOAD RATING				
LOAD RATING	COVER ENCLOSURE	DESIGN LOAD (Ib)	TEST LOAD (Ib)	TEST AREA (inch)
1	HS20	21000	45000	10 × 20
2	INCIDENTAL TRAFFIC (10K)	10000	22500	10 × 20
3	POLYMER CONCRETE	8000	12000	10 × 10
-				

APR. 24, 2003 DATE

H DEPARTMENT OF TRANSPORTATION
DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

UTAH STANDARD DE

Χ

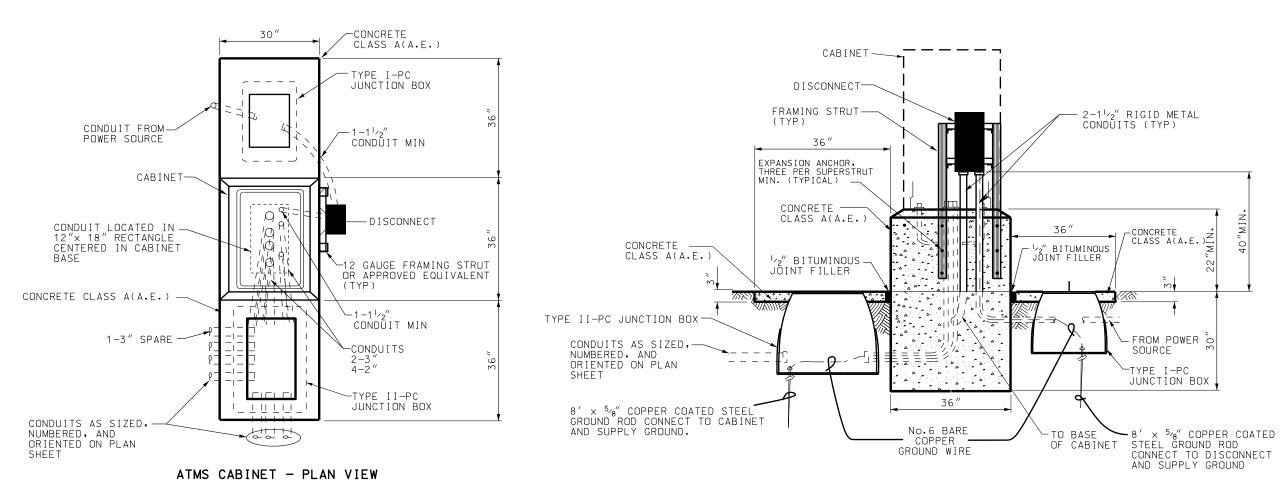
YMER-CONCRETE IUNCTION BOX DETAILS

POLYMEN.C. JUNCTION E DETAIL!

STD DWG AT 7

NOTES:

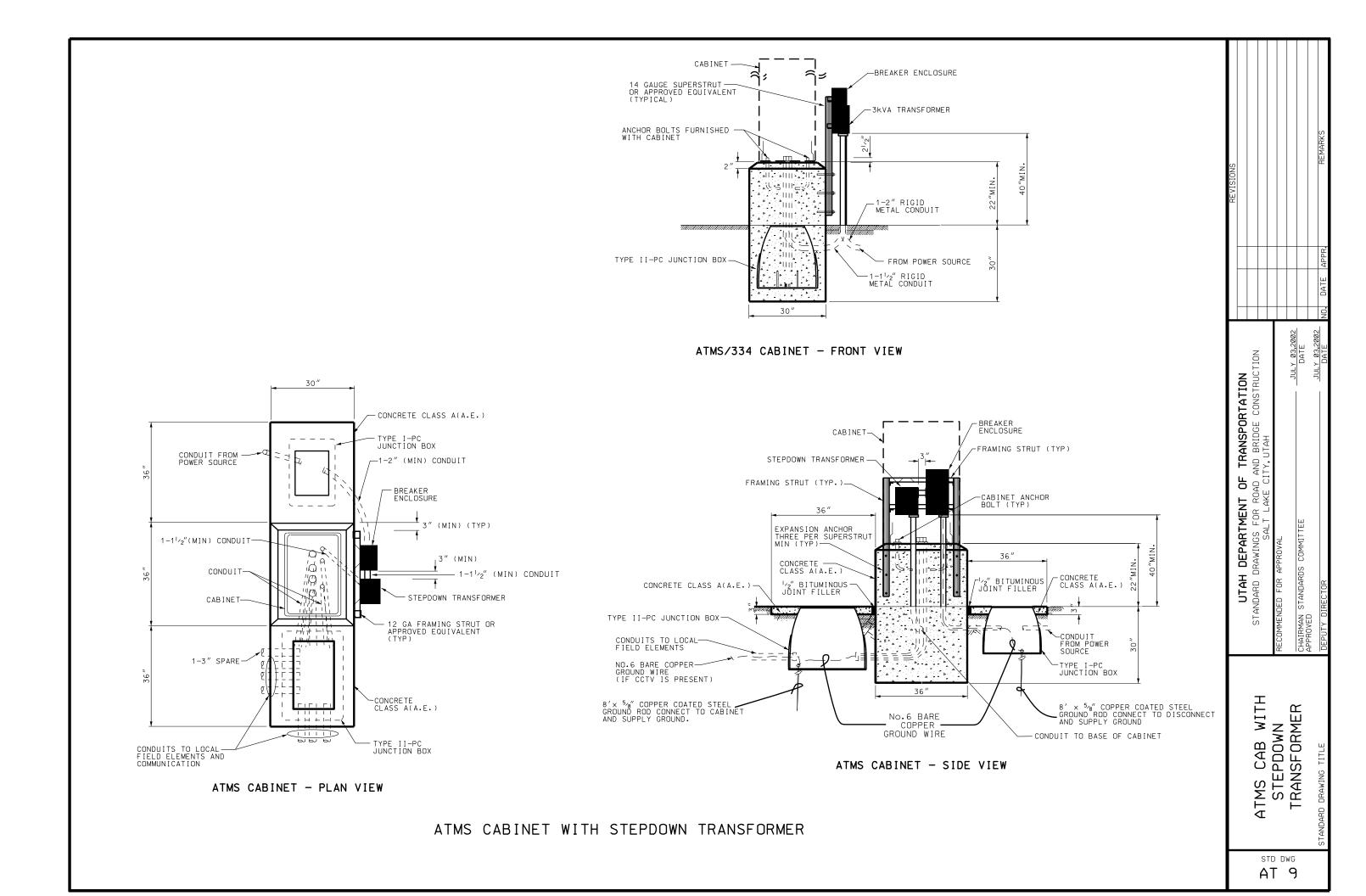
- 1. BOX TITLE NEEDS TO BE STAMPED INTO THE LID FROM THE FACTORY. (SEE SECTION 13554 ARTICLE 2.2H).
- 2. DO NOT PLACE JUNCTION BOXES IN THE TRAVELED-WAY OR ON FREEWAY SHOULDERS.

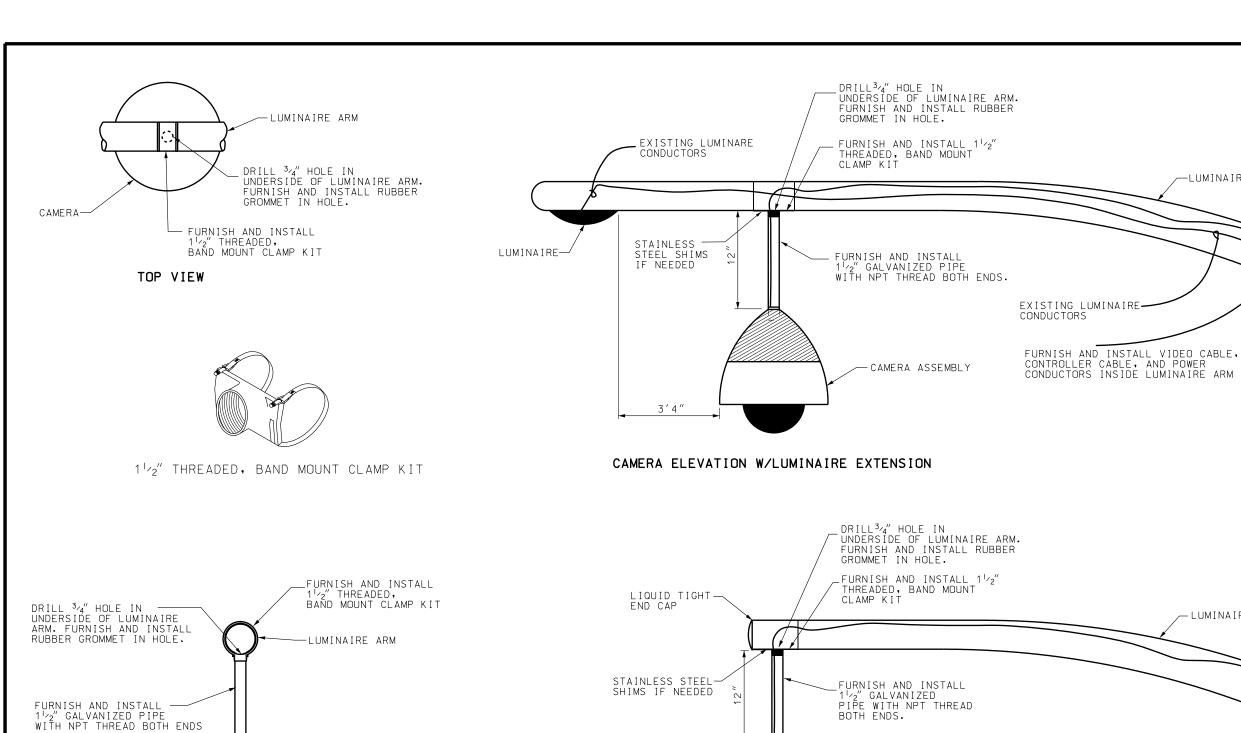


ATMS CABINET - SIDE VIEW

ATMS CABINET WITH 120V DISCONNECT

					REVISIONS	SIONS	
		OLAH DEPAKIMENI OF IKANSPOKIALION					
		STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION					
s' /							
7	TINIAVO ONTA						
T		RECOMMENDED FOR APPROVAL					
wG }	MY IZON DISCONNECT	JULY 03.2002	2002				
3		STANDARDS COMMITTEE					
		APPROVED A3 2002	2002				
	STANDARD DRAWING TITLE	DEPUTY DIRECTOR DATE		NO, DATE APPR.	APPR.	REMARKS	





	UNDERSIDE OF LUMINAIRE AF FURNISH AND INSTALL RUBBE GROMMET IN HOLE.	
LIQUID TIGHT— END CAP	FURNISH AND INSTALL 11/2" THREADED, BAND MOUNT CLAMP KIT	LUMINAIRE ARM
STAINLESS STEEL SHIMS IF NEEDED 2	FURNISH AND INSTALL 11/2" GALVANIZED PIPE WITH NPT THREAD BOTH ENDS.	
	CAMERA ASSEMBLY	FURNISH AND INSTALL VIDEO CABLE, CONTROLLER CABLE, AND POWER CONDUCTORS INSIDE LUMINAIRE ARM

-LUMINAIRE ARM

JULY 03,2002 DATE

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction salt lake city, utah

DETAIL

CCTV

DOMED

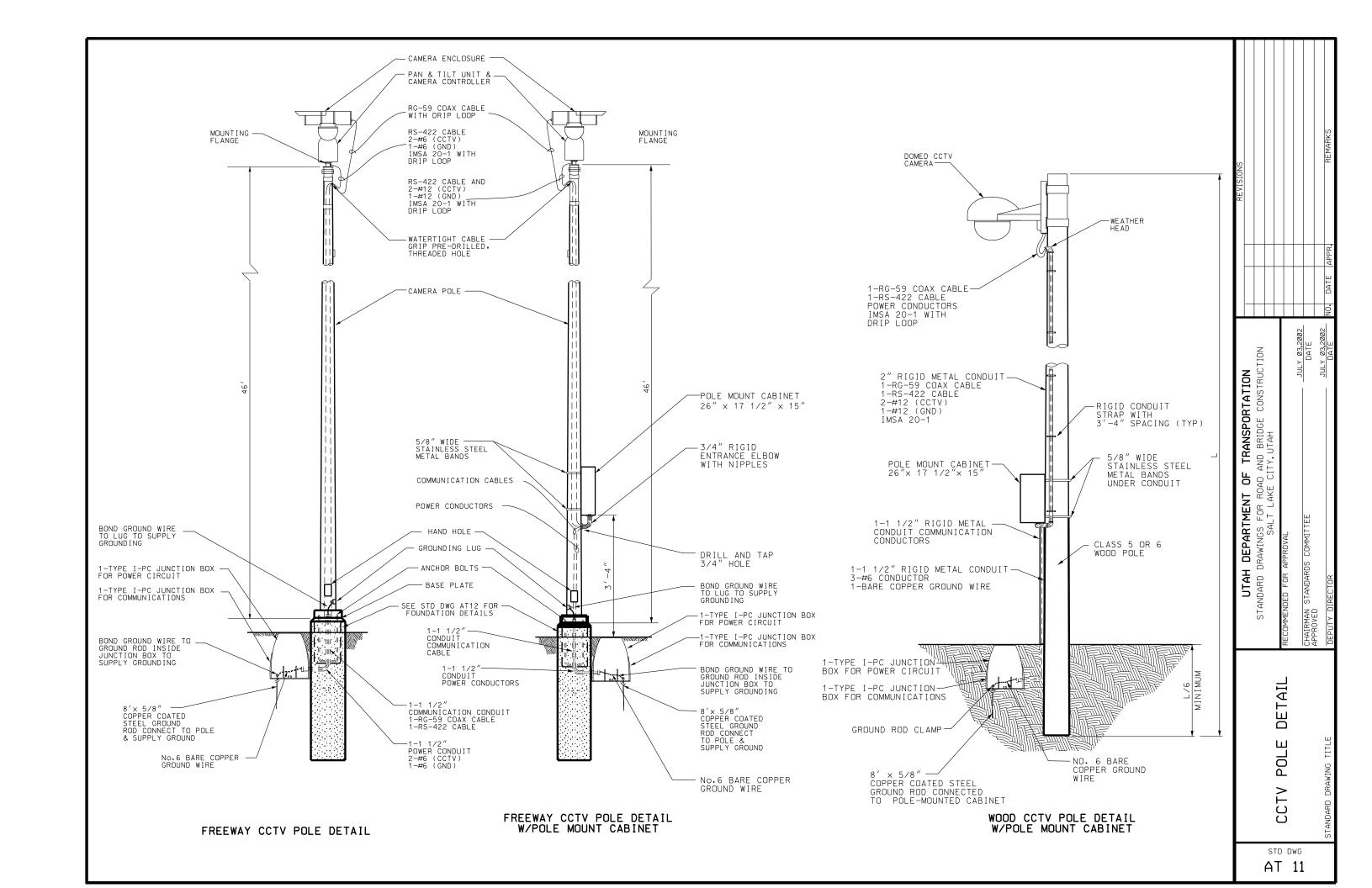
STD DWG AT 10

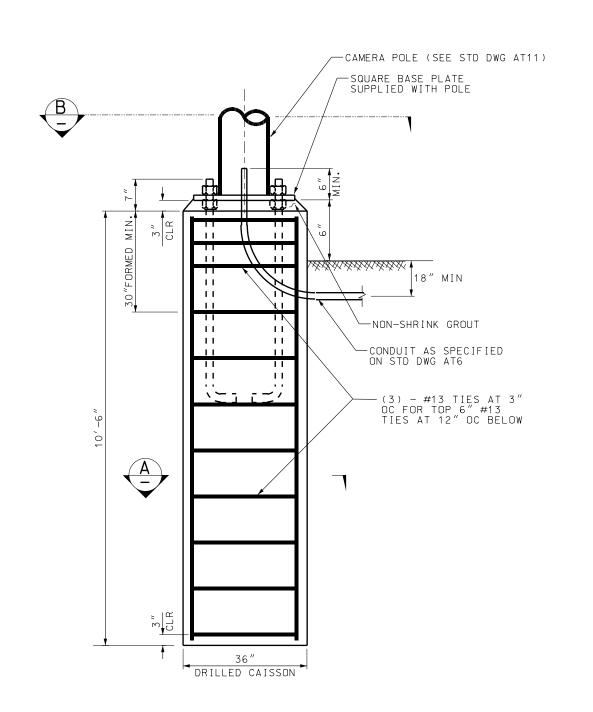
CAMERA ELEVATION W/END CAP

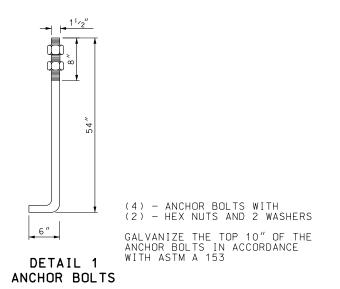
CAMERA ON LUMINAIRE DETAILS

CAMERA ASSEMBLY

SECTION VIEW







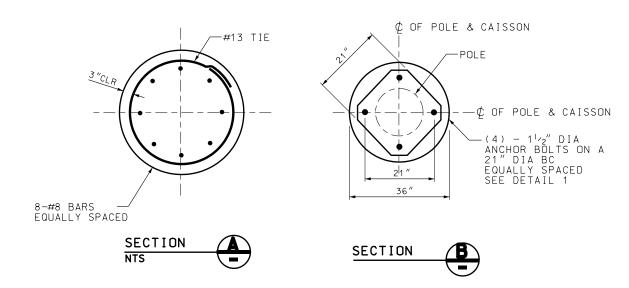
JULY 03,2002 DATE

UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH

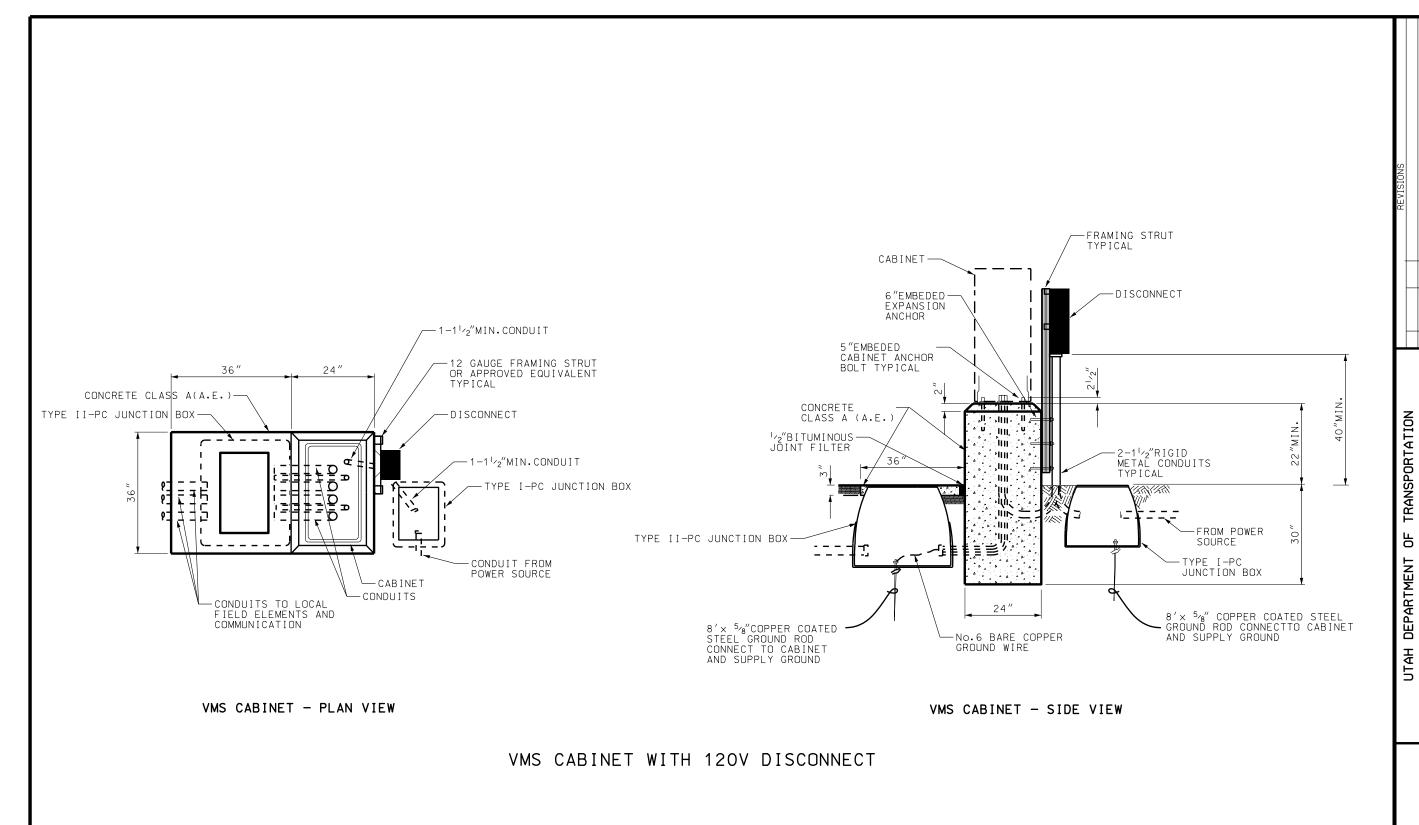
COMMENDED FOR APPROVAL

CCTV POLE FOUNDATION FOR DEDICATED CCTV POLE

STD DWG

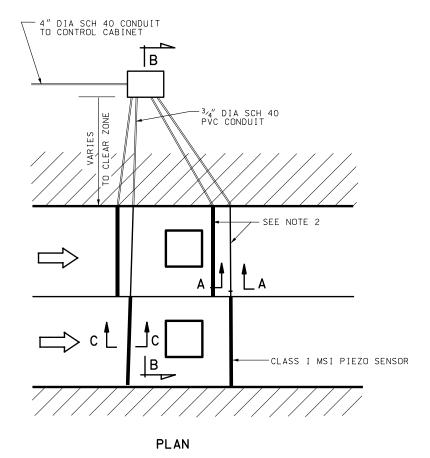


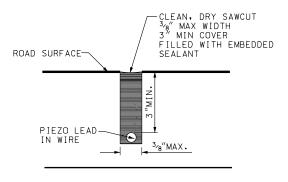
CAISSON FOUNDATION DETAILS



								REMARKS	
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	TRUCTION				JULY 03,2002	DATE	CANCER Y IIII.		7 - 20
	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE		DEPLITY NIPECTOR	
12ØV VMS CAB FOUNDATION DETAILS									
	-	s A	TD T	D\	иG 13	3			4

GRANULAR BACKFILL BORROW ROAD SURFACE 3" MIN COVER 6" MAX COVER OVER LEAD IN WIRE 6" MIN COVER DVER LEAD IN WIRE





SECTION A-A

NOTES:

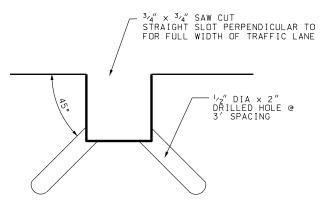
- REFER TO STD DWG SL3 FOR LOOP DETECTOR DETAILS.
- 2. MAINTAIN 6 INCH MIN SPACING BETWEEN SAW CUT, AND ANY CONCRETE JOINTS. LOCATE ALL LEAD INS DOWN STREAM OF PIEZO.

JULY 03,2002 DATE

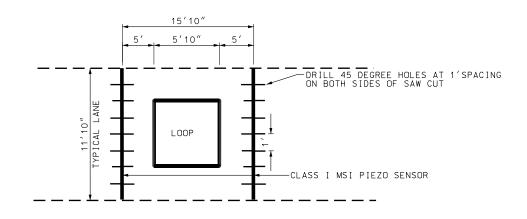
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah

> WEIGH IN MOTION PIEZO DETAIL

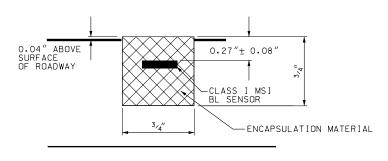
STD DWG AT 14



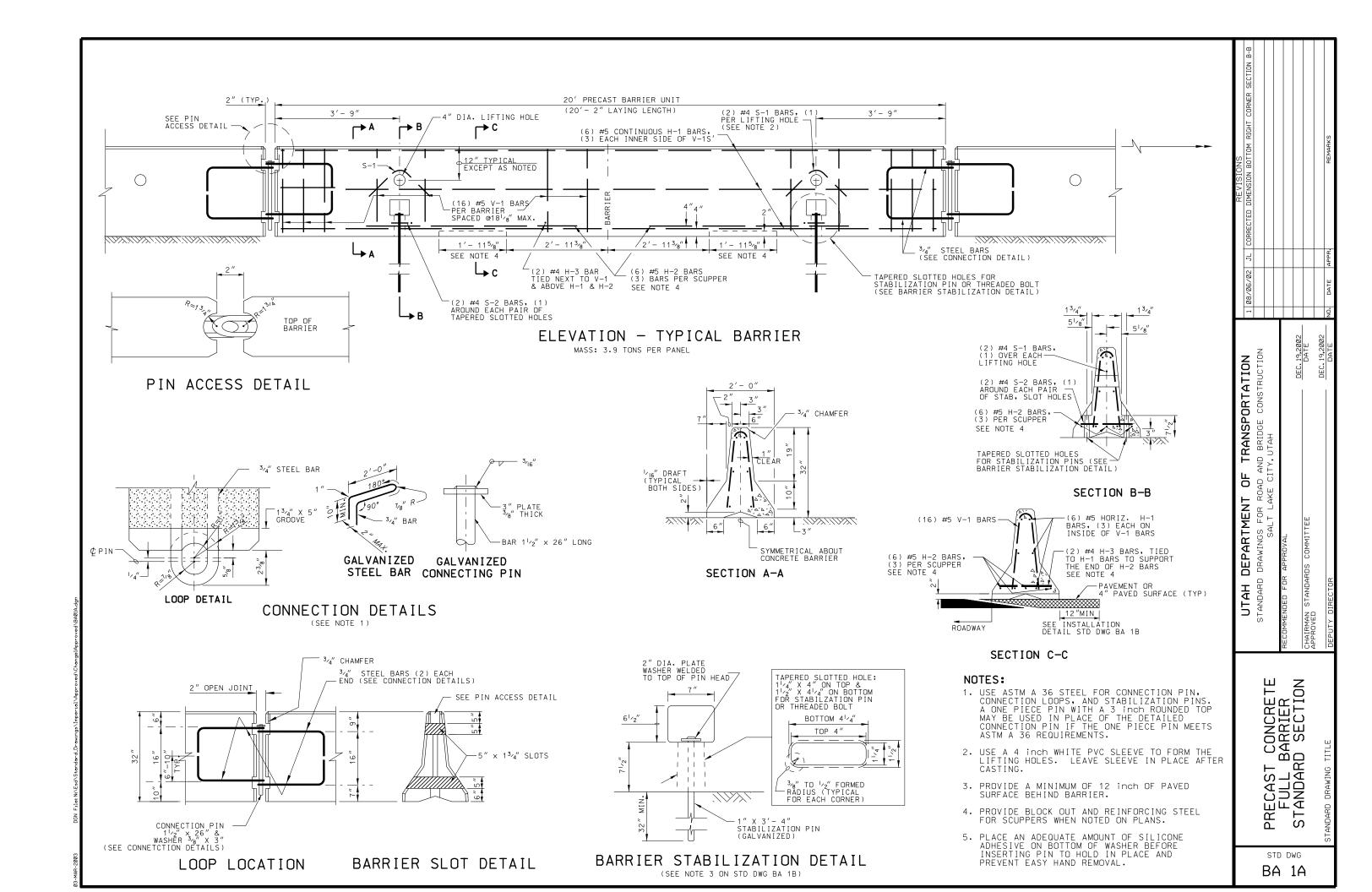
SAW CUT DETAIL



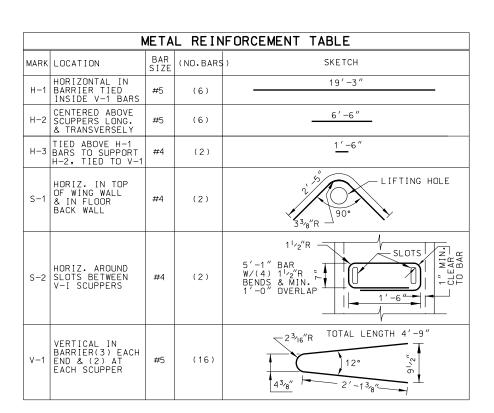
TYPICAL PIEZO DETAIL

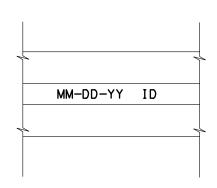


SECTION C-C



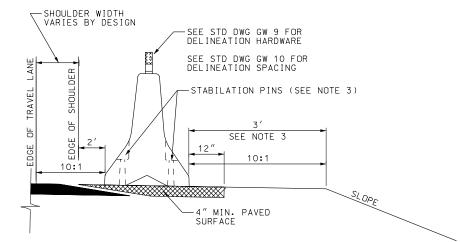




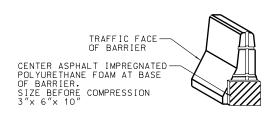


BARRIER MARKINGS

SEE NOTE 6



STANDARD INSTALLATION



BARRIER SEAL

TABLE OF MAXIM OUTSIDE SH	
DESIGN SPEED(MPH)	TAPER
70	20:1
60	18:1
55	16:1
50	14:1
45	12:1
40	10:1
35	8:1

TAE	3LE	1	
SEE	NOTE	1	

TABLE OF MAXIMUM TAPERS INSIDE SHY LINE				
DESIGN SPEED(MPH)	TAPER			
70	30:1			
60	26:1			
55	24:1			
50	21:1			
45	18:1			
40	16:1			
35	13:1			

TABLE 2 SEE NOTE 1

NOTES:

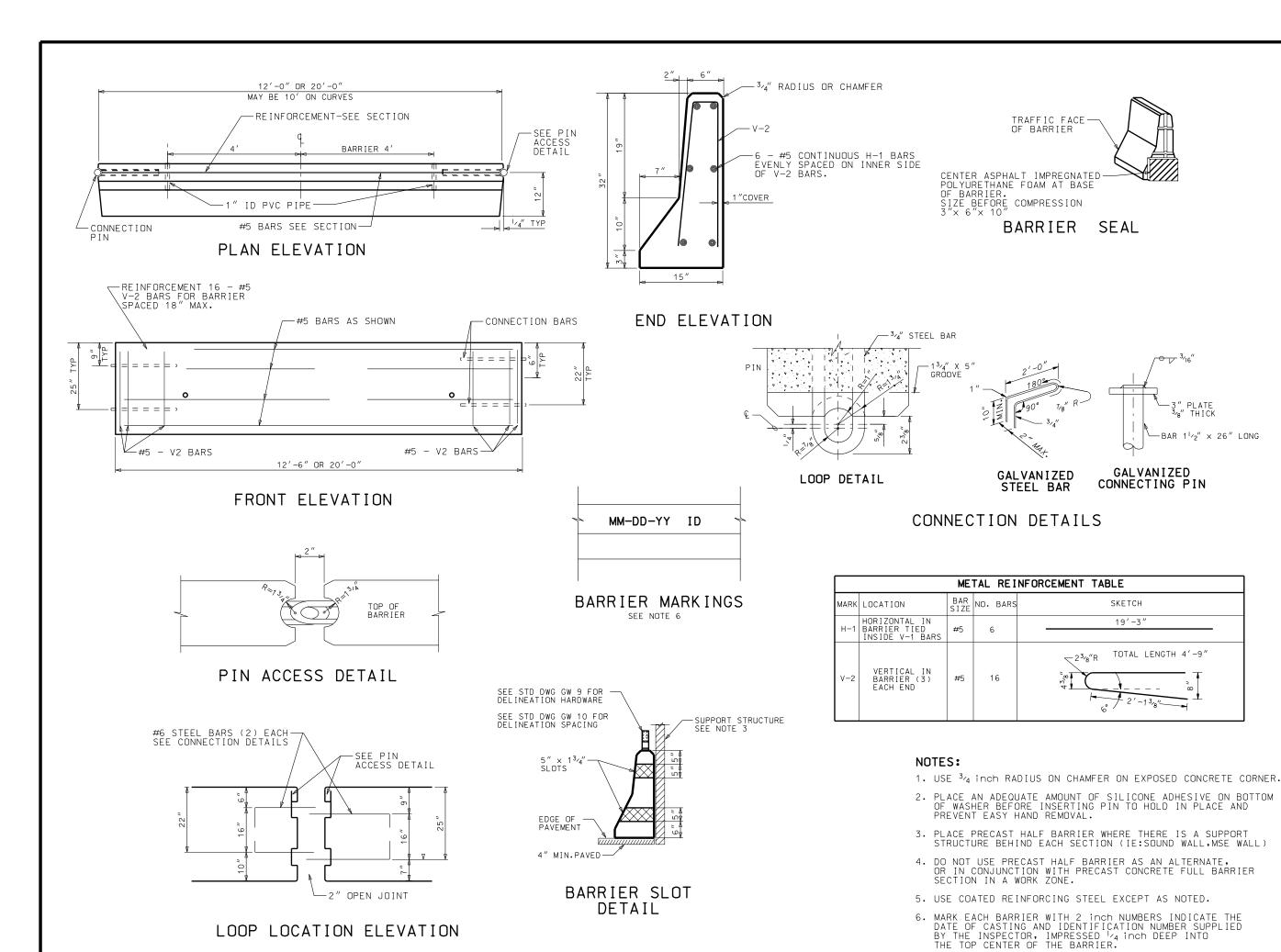
- USE APPROPRIATE TAPER RATE FOR BARRIER PLACEMENT FROM TABLE 1 OR TABLE 2.
- 2. PIN ALL BARRIER SECTION TOGETHER AT CONNECTION LOOPS.
- 3. THE CONCRETE BARRIER "STANDARD INSTALLATION" DESIGN ALLOWS FOR 3 feet OF OUTWARD LATERAL MOVEMENT IF THE BARRIER IS STRUCK. USE STABILIZATOR PINS WHEN BARRIER PLACEMENT REQUIREMENTS DO NOT ALLOW FOR 3 feet OUTWARD LATERAL MOVEMENT.
- 4. USE ASTM A 36 STEEL FOR CONNECTION PIN, CONNECTION LOOPS, AND STABILIZATION PINS.USE A ONE PIECE PIN WITH A 3 inch ROUNDED TOP PLACE OF THE CONNECTION PIN THE ONE PIECE PIN MEETS ASTM A 36 REQUIREMENTS.
- 5. USE A 4 inch WHITE PVC SLEEVE TO FORM THE LIFTING HOLES. LEAVE SLEEVE IN PLACE AFTER CASTING.
- 6. MARK EACH BARRIER WITH 1 1/2 inch numbers indicating the date of casting and identification number supplied by the inspector, impressed 1/4 inch deep into the top center of the barrier.
- 7. USE COATED REINFORCING STEEL EXCEPT AS NOTED.
- 8. DO NOT USE BARRIER SEAL WHEN SCUPPERS ARE PRESENT ON BARRIER.

TRANSPORTATION
AND BRIDGE CONSTRUCTION
TY, UTAH AND ITY, L P DEPARTMENT O UTAH CHAIRMAN APPROVED

PRECAST CONCRETE FULL BARRIER STANDARD SECTION

STD DWG

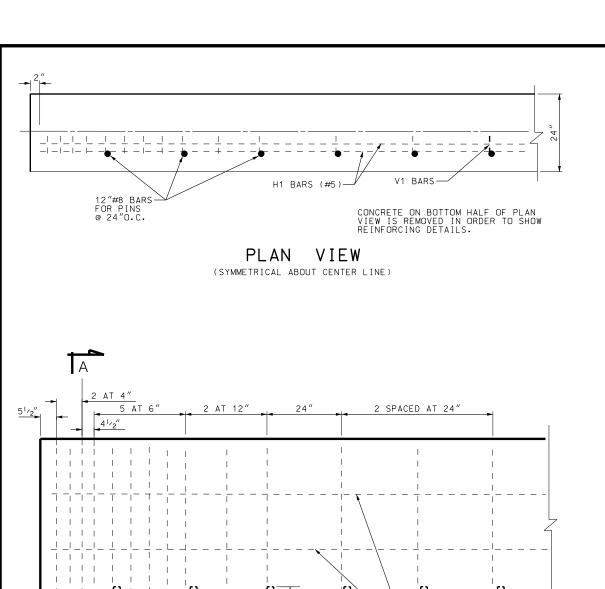
BA 1B



TRANSPORTATION
AND BRIDGE CONSTRUCTION
IY, UTAH P DEPARTMENT UTAH CONCRETE BARRIER RD SECTION

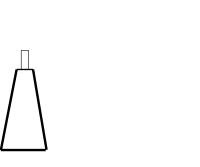
PRECAST HALF E STANDARD

STD DWG

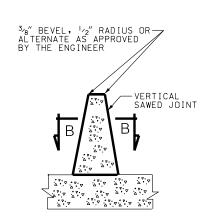


ELEVATION

24" SEE SECTION A-A



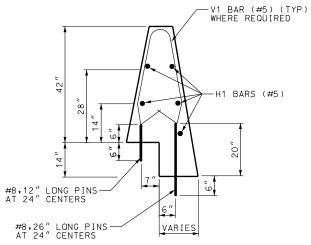
DELINEATION HARDWARE AND SPACING



-H1 BARS (#5)

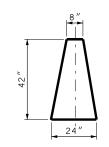
SECTION THROUGH SAWED JOINT

REINFORCING DETAILS



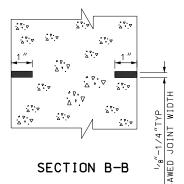
13/4"COVER -H1 BARS (#5) -#8,12" LONG PINS AT 24"CENTERS (EACH SIDE) SECTION A-A

SECTION A-A (STEPPED PAVEMENT)



21/4" R 15" V1 BAR (#5)

TYPICAL SECTION



NOTES:

- 1. METHODS DEVISED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER ASSURING THE LONGITUDINAL ROADWAY STEEL IS POSITIONED, +/- 1/2 inch as dimensioned is satisfactory.
- 2. THE CONTRACTOR CAN SLIP FORM THE BARRIER, IN WHICH CASE TYING ADDITIONAL REINFORCEMENT TO THE UPPER TWO THIRDS OF THE REINFORCING CAGE PROVIDES BRACING.
- 3. DO NOT USE BARRIER TO SUPPORT HIGHWAY LIGHTING POLES.
- 4. DO NOT USE BARRIER FOR BRIDGE ROADWAY APPLICATIONS.
- 5. SAW JOINTS AT PAVEMENT TRANSVERSE JOINTS.
- 6. USE COATED DEFORMED BILLET-STEEL BARS CONFORMING TO AASHTO M 284, OR M 111 AND M 31M GRADE 400.
- 7. USE CLASS AA(AE) CONCRETE UNLESS WHERE SPECIFIED OTHERWISE.
- 8. SEE STD DWG GW 9 FOR DELINEATION HARDWARE AND STD DWG GW 10 FOR DELINEATION SPACING.

REVISIONS	1 08/08/02 T.J. ADDED "UNLESS" TO NOTE 7							NO. DATE APPR. REMARKS
	CIAT DEFARIMENI OF IRANSPORIALION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL	DEC. 19,2002	CHAIRMAN STANDARDS COMMITTEE	19 2002	DEPUTY DIRECTOR DATE
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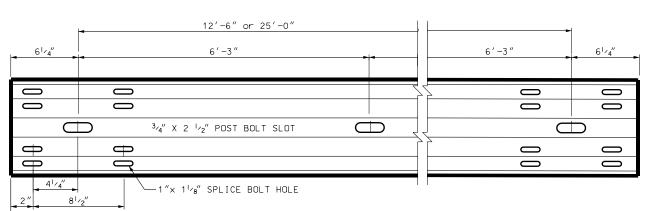
CAST CONST B

STD DWG

SEE NOTE 8

IA

BA 3



121/4

SECTION THRU RAIL ELEMENT

SEE NOTE 2

13/16" BOLT HOLE-

SIDE

TOP

FRONT

SIDE

6" X 8"

NOTCHED WOOD BLOCK

(SEE NOTE 3)

W6 X 8.5

STEEL POST

(SEE NOTE 1)

-13_{/16}" HOLES

FRONT

3/16" HOLES

GALV.STEEL

SEE NOTE 2

R S

6" X 8"

WOOD POST

(SEE NOTE 1)

6" X 8"

WOOD BLOCK

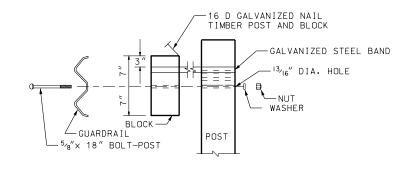
FRONT

SIDE

SIDE

STANDARD GUARDRAIL PANELS

1"x 11/8" SPLICE BOLT SLOT (TYP)

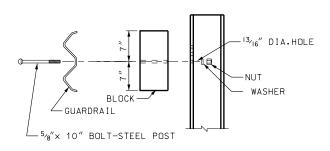


WOOD POST TO RAIL TYPICAL USE BOTTOM HOLE FOR INTIAL INSTALLATION

13/16" X 2¹/2" POST BOLT SLOT (TYP)

END SECTION (FLARED)

USE END SECTION (FLARED) WHEN TRAILING END IS OUTSIDE OPPOSING TRAFFIC CLEAR ZONE.



BUTTON HEAD BOLT

GALVANIZED BOLTS, NUTS, WASHERS

SPLICE BOLTS (WASHER NOT REQ'D.) STEEL BOLT W/ WOOD BLOCK WOOD POST W/ WOOD BLOCK WOOD POST W/WOOD BLOCK (MEDIAN)

STEEL POST TO RAIL TYPICAL

USE BOTTOM HOLE FOR INTIAL INSTALLATION

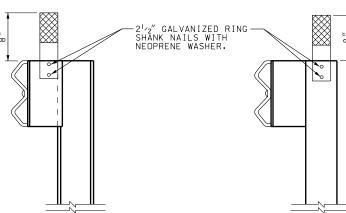
NOTES:

- 1. SEE INSTALLATION DETAIL STD DWG BA 4B FOR POST LENGTH REQUIREMENTS.
- 2. 84 inch POST MARKING: WOOD POST, BRAND POST WITH $1^{1}\prime_{2}$ inch x 2 inch MARKING L84, STEEL POST STAMP POST WITH $1^{1}\prime_{2}$ inch x 2 inch MARKING L84.
- 3. DO NOT USE WASHERS ON RAIL SPLICE CONNECTION.
- 4. A COMPOSITE OR PLASTIC BLOCK CAN BE SUBSTITUTED FOR THE NOTCHED WOOD BLOCK ON STEEL POST INSTALLATION. NCHRP-350 COMPLIANCE REQUIRED.



13/16" HOLES

FRONT



OR COMPOSITE BLOCK

SEE STD DWG GW 9 FOR HARDWARE AND GW 10 FOR PLACEMENT

WOOD POST W/ WOOD BLOCK

AND GW 10 FOR PLACEMENT

25" DELINEATOR DETAIL STEEL POST W/WOOD

DELINEATOR DETAIL

SEE STD DWG GW 9 FOR HARDWARE

IF TRANSPORTATION
O AND BRIDGE CONSTRUCTION
CITY, UTAH

PF

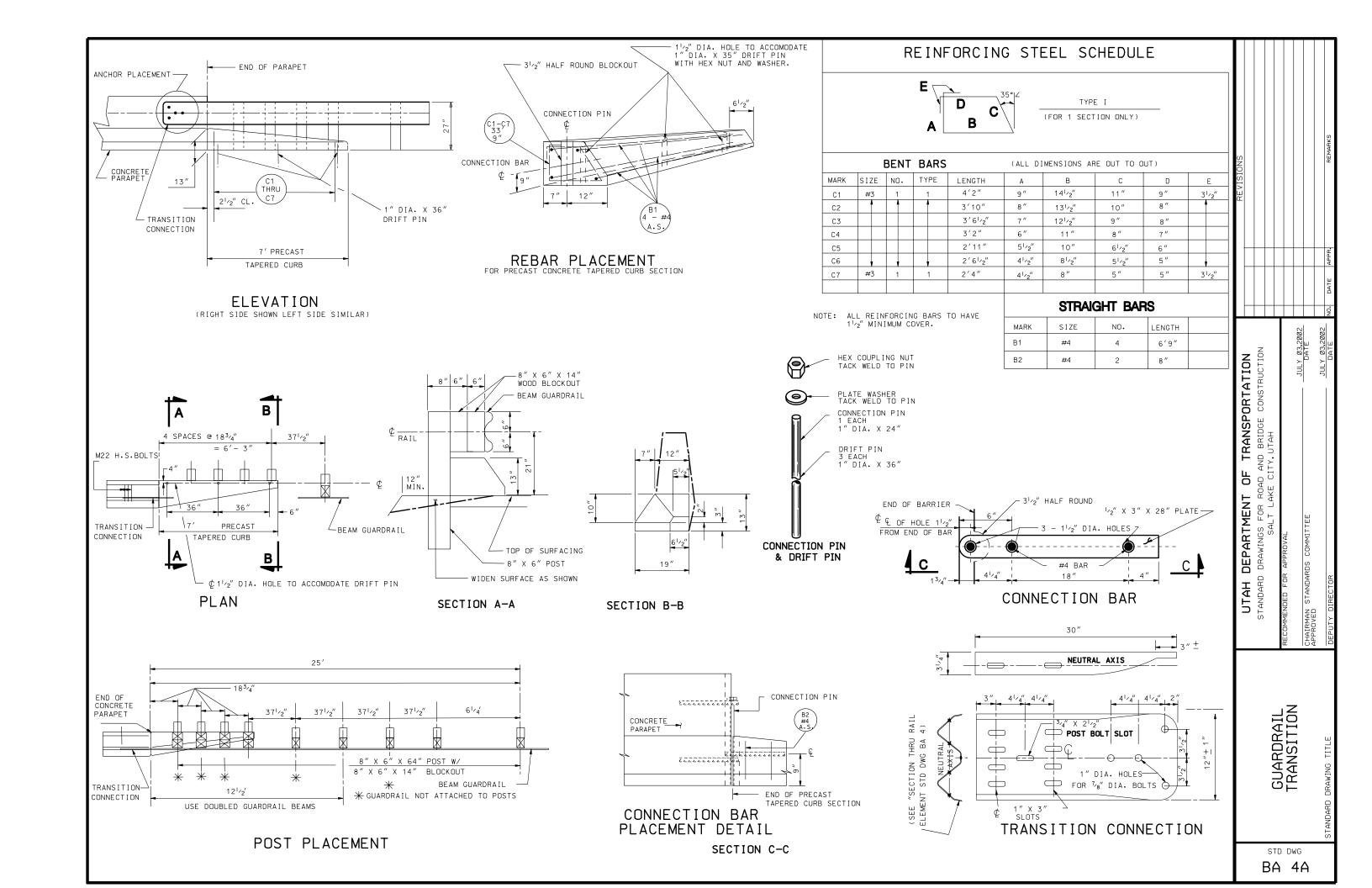
DEPARTMENT

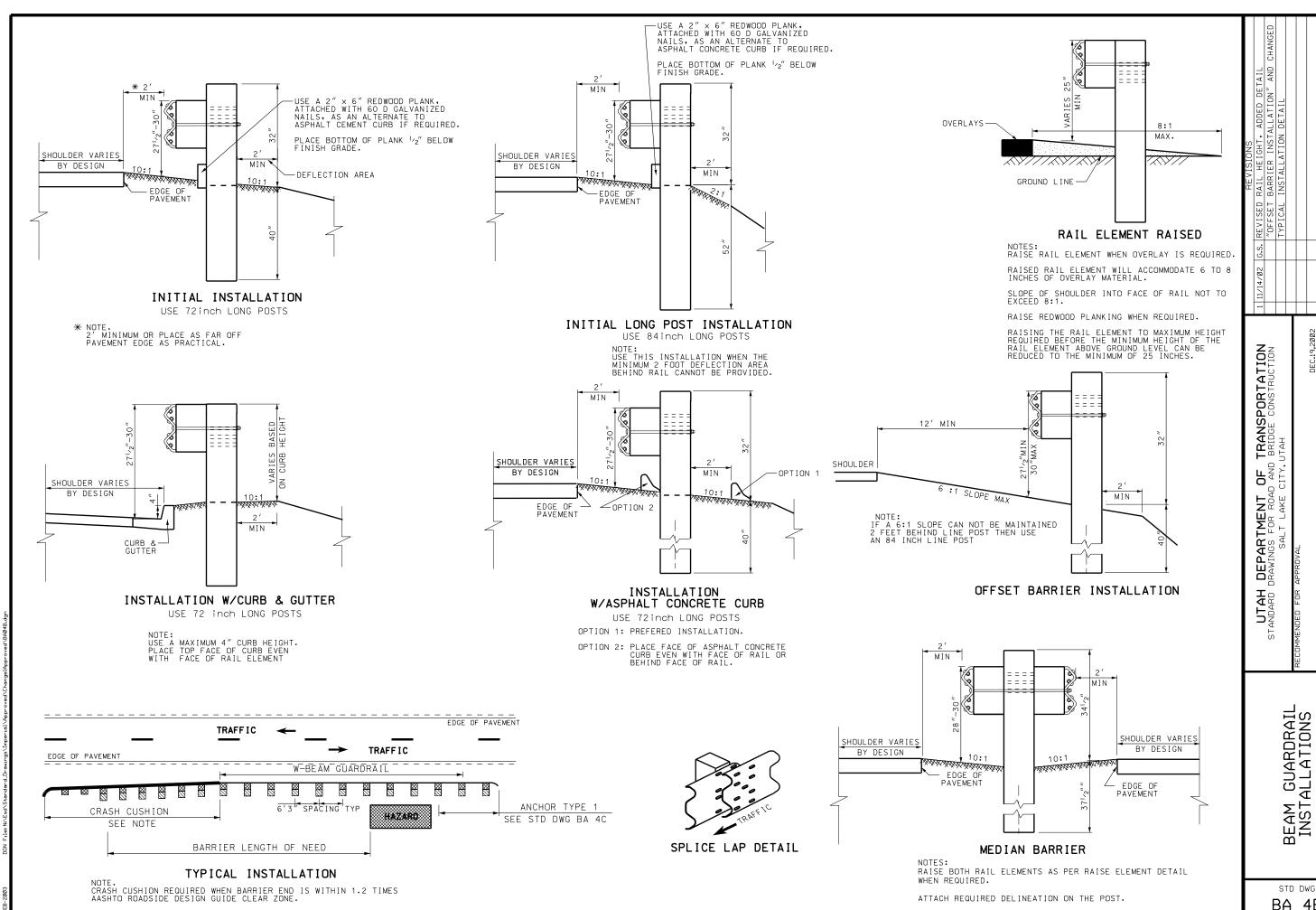
UTAH E

STD DWG

BEAM GUARDRAIL HARDWARE

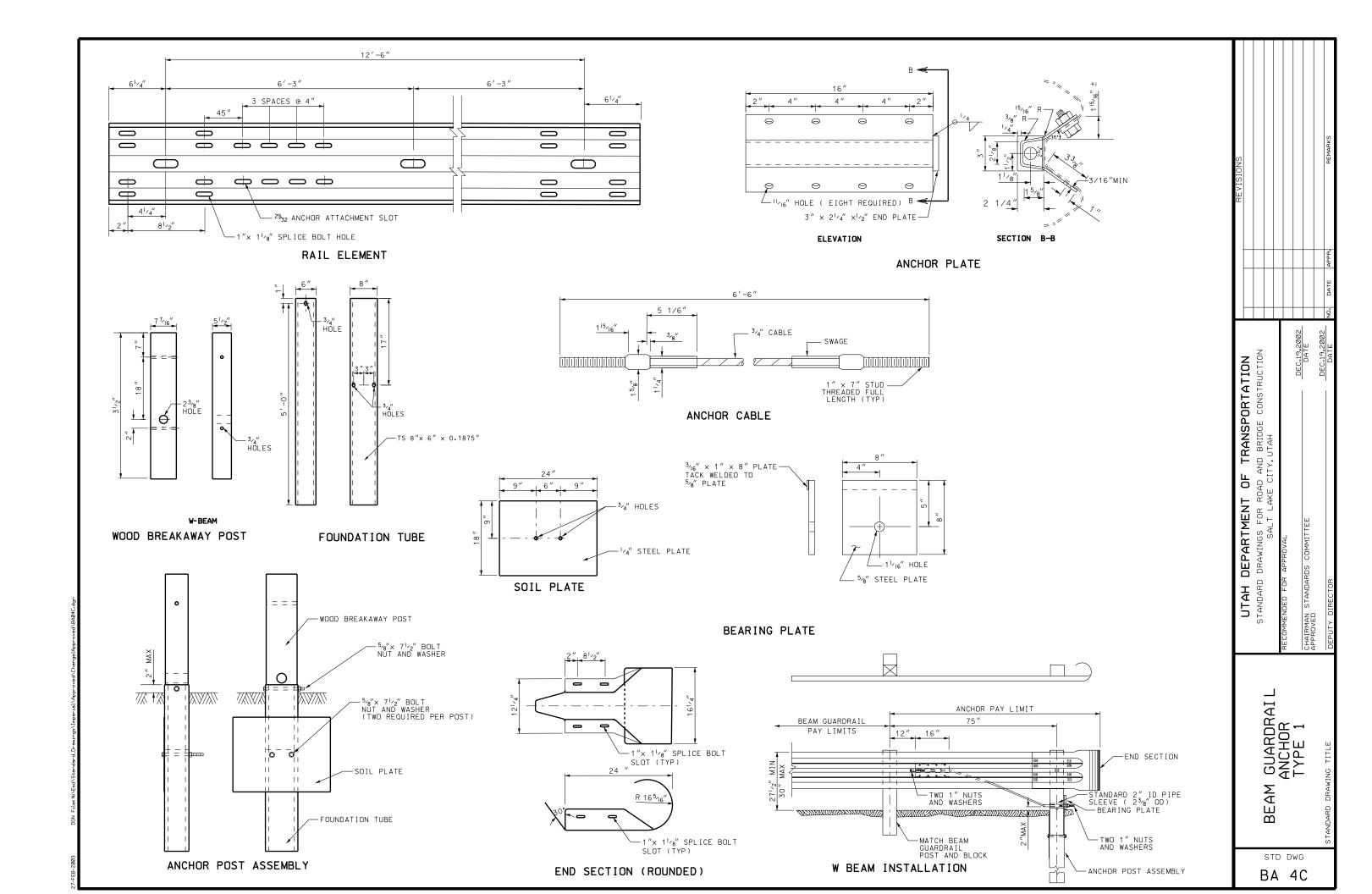
BA 4

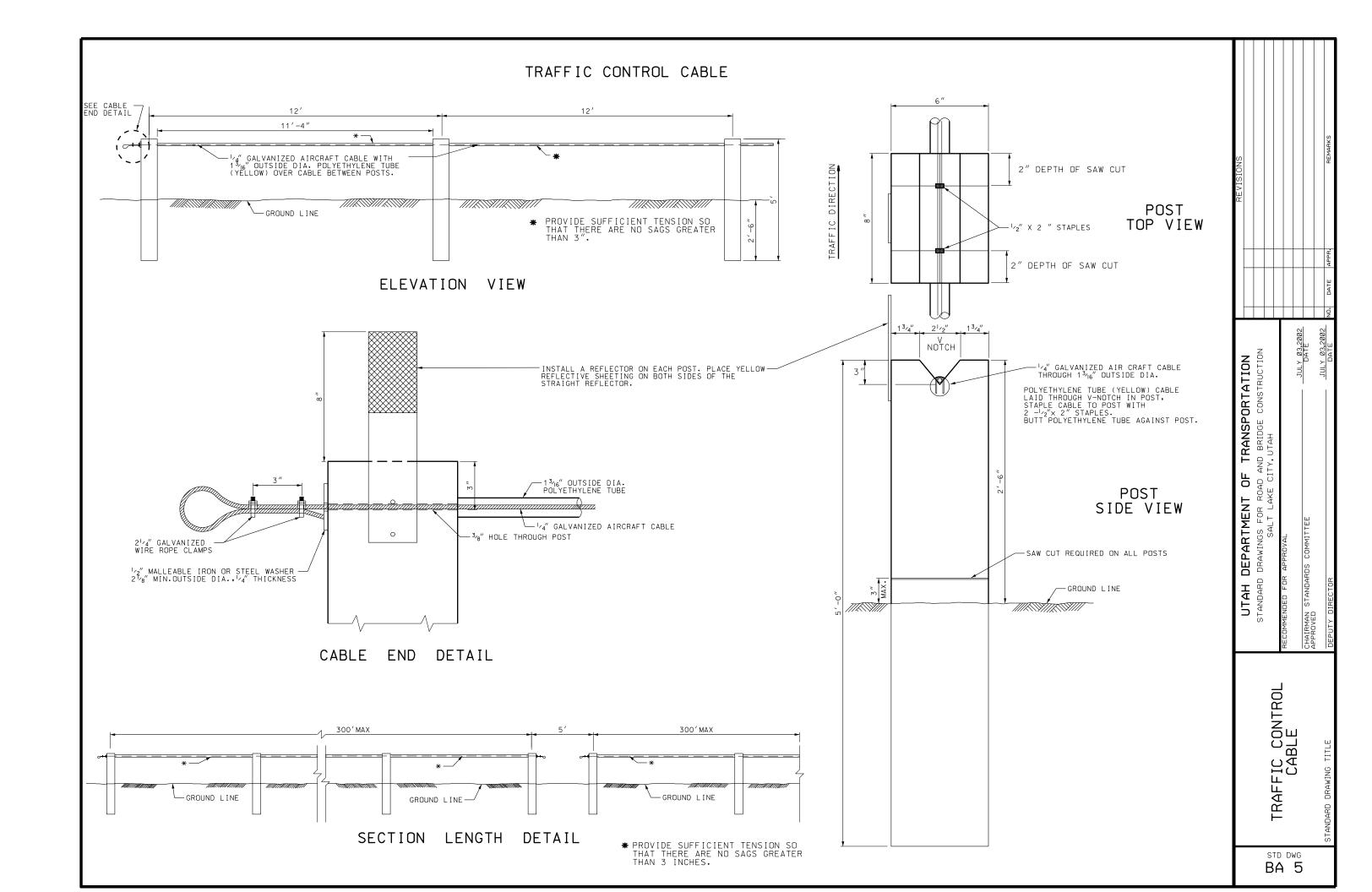


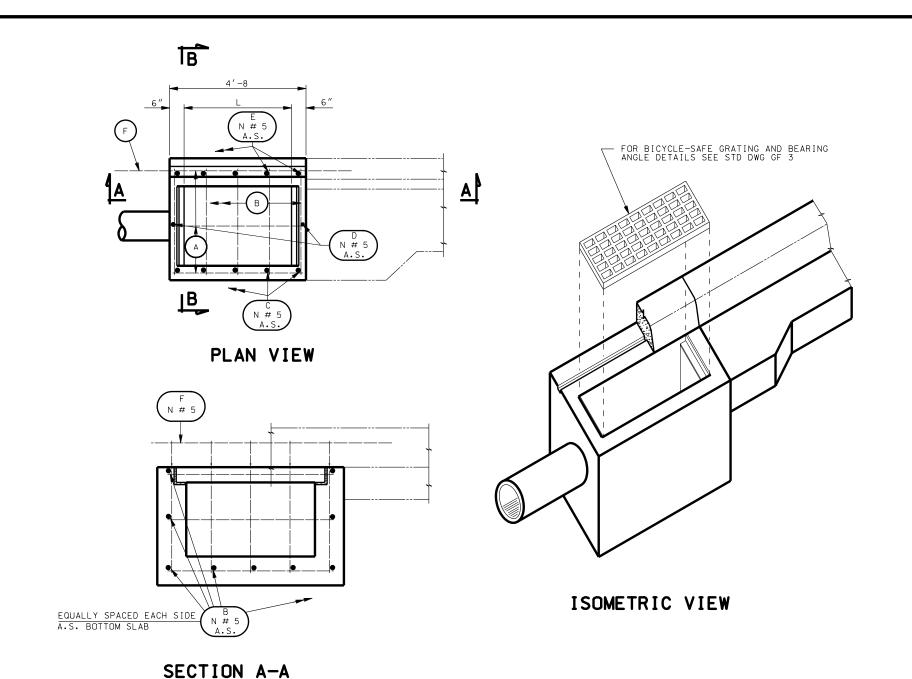


STD DWG BA 4B

ATTACH REQUIRED DELINEATION ON THE POST.







EQUALLY SPACED EACH SIDE

A.S. BOTTOM SLAB

2'-91/2

SECTION B-B

NOTES:

- 1. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
- 2. USE STRUCTURAL STEEL CONFRONTING TO AASHTO M 270 GRADE 36 EXCEPT WHERE NOTED OTHERWISE.
- 3. FOR GRATING AND BEARING DETAILS SEE STD DWG GF 3.
- 4. USE CLASS AA(AE) CAST-IN-PLACE CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.
- 5. USE TYPE II CEMENT (LOW ALKALI) UNLESS SPECIFIED OTHERWISE IN SPECIAL PROVISIONS.
- 6. CHAMFER ALL EXPOSED CONCRETE CORNERS $^{3}\slash\!\!/^{\prime\prime}$ EXCEPT WHERE NOTED OTHERWISE.
- 7. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.
- 8. INCLUDE CONCRETE QUANTITIES FOR CURB & GUTTER IN ROADWAY QUANTITIES.
- 9. DEDUCT CONCRETE DISPLACED BY PIPE(S) (TABLE"A") FROM CONCRETE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION.
- 10. CUT AND BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPE(S) AND MAINTAIN 2" CLEARANCE.
- 11. FOR LOCATION AND SIZE OF PIPE(S) SEE ROADWAY PLANS.
- 12. QUANTITIES IN TABLE "A" ARE FOR PIPE THROUGH 6" WALL THICKNESS.

DESIGN DATA

HS-20-44 OR INTERSTATE ALTERNATE MILITARY LOADING IN ACCORDANCE WITH AASHTO AND INTERIM SPECIFICATIONS.

STRUCTURAL CONCRETE: Fc = 1,400 psi $\,$ REINF. STEEL: Fs = 24,000 psi STRUCTURAL STEEL: Fs = 20,000 psi $\,$ n = 8

QUANTITIES

SEE SCHEDULE OF INSTALLATION

					S	CHED	U	LE C)F	INS	S 1	TALL	A ⁻	LION	1					
NO NO	D I	MEN	SIO	NS		4X.			F	EIN	F٥	ORC I	N	G SI	ΓΕ	EL			REINF.	
INE INE						DIA.	L	Α		В		С		D		E		F	STEEL	
	Н	W	L	- ''	R.C.P.		N	LENGTH	N	LENGTH	N	LENGTH	N	LENGTH		LENGTH	N	LENGTH		Cu.Yds
1	2'-0	1'-8	3′-8	1'-6		15"	7	4'-4	9	2'-5	5	1'-9	2	1′-8	5	2'-0	1	7′-0	84.7	0.65
2	2'-6	1'-8	3′-8	2'-0	12"	18"	9	4'-4	11	2'-5	5	2'-3	2	2'-2	5	2'-6	1	7′-0	105.0	0.79
3	3′-0	1′-8	3′-8	2'-6	15 "	18"	9	4'-4	11	2′-5	5	2'-9	2	2′-8	5	3'-0	1	7′-0	111.3	0.93
4	3′-6	1'-8	3′-8	3'-0	15"	18"	11	4'-4	13	2′-5	5	3'-3	2	3'-2	5	3'-6	1	7′-0	131.6	1.07
5	4′-0	1'-8	3′-8	3'-6	15"	18"	11	4'-4	13	2'-5	5	3'-9	2	3′-8	5	4'-0	1	7′-0	137.9	1.21
6	4′-6	1′-8	3'-8	4'-0	15"	18"	13	4'-4	15	2'-5	5	4'-3	2	4'-2	5	4'-6	1	7′-0	158.2	1.35
7	5′-0	1′-8	3'-8	4′-6	15"	18"	13	4'-4	15	2'-5	5	4'-9	2	4′-8	5	5'-0	1	7′-0	164.5	1.49

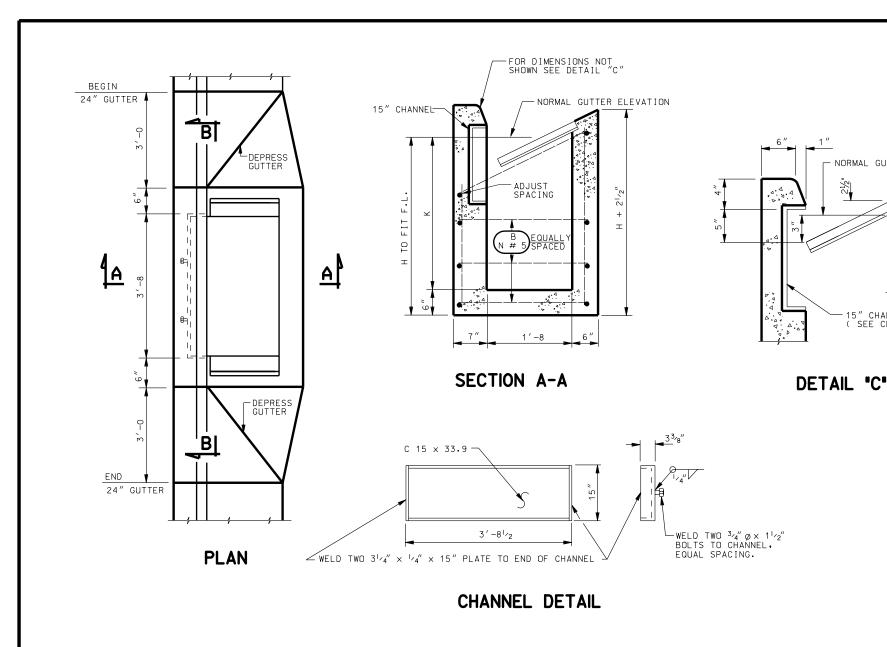
	TABLE	E "A"	
R.C	.P.	C. M	I.P.
DIA.	CU. YD.	DIA.	CU. YD.
12"	.017	12"	.015
15"	.037	15"	.023
		18"	.033

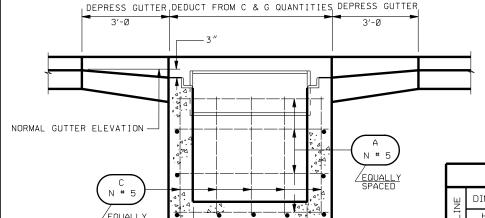
							APPR. REMARKS
							NO. DATE APPR.
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OIGH DEFAKIMENI OF IKANSFOKIALION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL	JULY 83,2882	CHAIRMAN STANDARDS COMMITTEE DATE	JULY 03,2002	DEPUTY DIRECTOR DATE

STANDARD CACH BASIN

STD DWG

CB 1





SECTION B-B

7	ABLE	- "A"												
R.C.	R.C.P. C.M.P.													
DIA.	CU.YDS.	DIA.	cu.yds.											
12"	.024	12"	.015											
15″	.036	15″	.023											
		18"	.033											

NOTE: QUANTITIES IN TABLE "A" ARE FOR PIPE THROUGH 6" WALL.

		SCH	ΗEI	Dι	JLE	0F	INS	TAL	LATI	ON			
N.	DIMEN	SIONS	MA PIF		MUM DIA.		REIN A	FORC	ING STE B	EL	С	REIN. STEEL	CONC.
	Н	K	RC	CP.	CMP	N	LENGTH	N	LENGTH	N	LENGTH	LBS.	CU. YDS
1	2′-Ø	1′-Ø	— 15″		7	4'-4	9	2′-5	12	1′-9	76.2	Ø . 63	
2	2′-6	2'-Ø	12" 18"		9	4'-4	11	2′-5	12	2′-3	96.6	Ø . 75	
3	3′-Ø	2′-6	15	5 "	4	9	4'-4	11	2′-5	12	2′-9	102.8	Ø . 88
4	3′-6	3′-Ø	1	ı		11	4'-4	13	2′-5	12	3′-3	123.2	1.00
5	4′-Ø	3′-6				11	4'-4	13	2′-5	12	3′-9	129.4	1.13
6	4′-6	4'-0			13	4'-4	15	2′-5	12	4′-3	149.8	1.25	
7	5′-Ø	4′-6	15	5"	18"	13	4'-4	15	2′-5	12	4'-9	156.Ø	1.38

NOTES:

FOR GRATING AND BEARING DETAILS -SEE STD DWG GF 3

NORMAL GUTTER ELEVATION

CHANNEL (SEE CHANNEL DETAIL)

- 1. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M-284 OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
- 2. USE STRUCTURAL STEEL CONFORMING TO AASHTO M 270 GRADE 36 EXCEPT WHERE NOTED OTHERWISE.

CONCRETE CURB & GUTTER

- 3. HOT-DIP GALVANIZE THE CHANNEL AND END PLATES AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M 111
- OTHERWISE.
- 5. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.
- 6. USE CLASS AA(AE) CAST-IN-PLACE CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.
- 7. TYPE II CEMENT (LOW ALKALI) REQUIRED.
- 8. INCLUDE CONCRETE QUANTITIES FOR CURB AND GUTTER IN ROADWAY QUANTITIES
- 9. FOR LOCATION AND SIZE OF PIPE(S) SEE ROADWAY PLANS.
- 10. CUT AND/OR BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPES AND MAINTAIN 2" CLEARANCE.
- 11. DEDUCT CONCRETE DISPLACED BY PIPES (TABLE "A") FROM CONCRETE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION.
- 12. QUANTITIES IN TABLE "A" ARE FOR PIPE THROUGH 6" WALL THICKNESS.

DESIGN DATA

HS 20-44 OR INTERSTATE ALTERNATE MILITARY LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS. Fs = 20,000 psiSTRUCTURAL STEEL:

STRUCTURAL CONCRETE:

Fc = 1400 psi Fs = 24, 000 psi N = 8

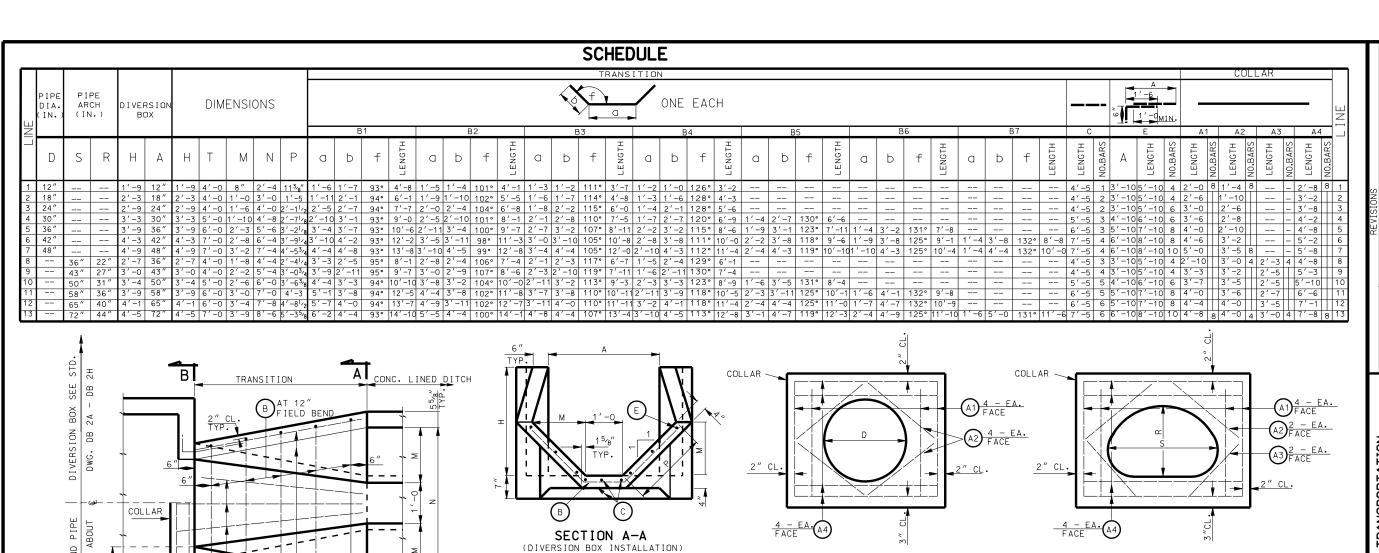
QUANTITIES

SEE SCHEDULE OF INSTALLATION

4 DEPARTMENT OF TRANSPORTATION
DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH UTAH Standard Di CURB INLET CATCH BASIN

CB 2

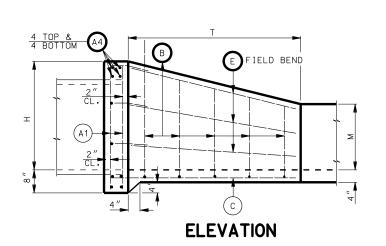
STD DWG



DESIGN DATA

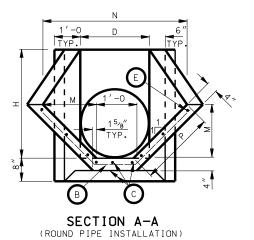
HS 20-44 OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO SPECIFICATIONS AND INTERIM SPECIFICATIONS:

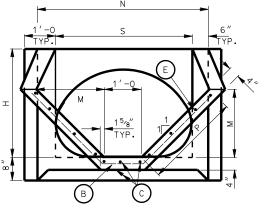
fo = 1,400 psi
fs = 24,000 psi
n = 8



В

PLAN





SECTION B-B (ROUND PIPE INSTALLATION)

SECTION A-A
(ARCH PIPE INSTALLATION)

NOTES:

1. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31 GRADE 60.

SECTION B-B (ARCH PIPE INSTALLATION)

- 2. TYPE II CEMENT (LOW ALKALI) REQUIRED.
- 3. DEDUCT CONCRETE DISPLACED BY PIPE FROM THOSE CONCRETE QUANTITIES GIVEN IN SCHEDULE.
- 4. IF PIPE SIZES OTHER THAN SHOWN ARE USED OR IF PIPES ARE SKEWED, ADJUST CONCRETE QUANTITIES ACCORDINGLY.
- 5. USE #4 REINFORCING STEEL SPACED EQUALLY AT 12"±

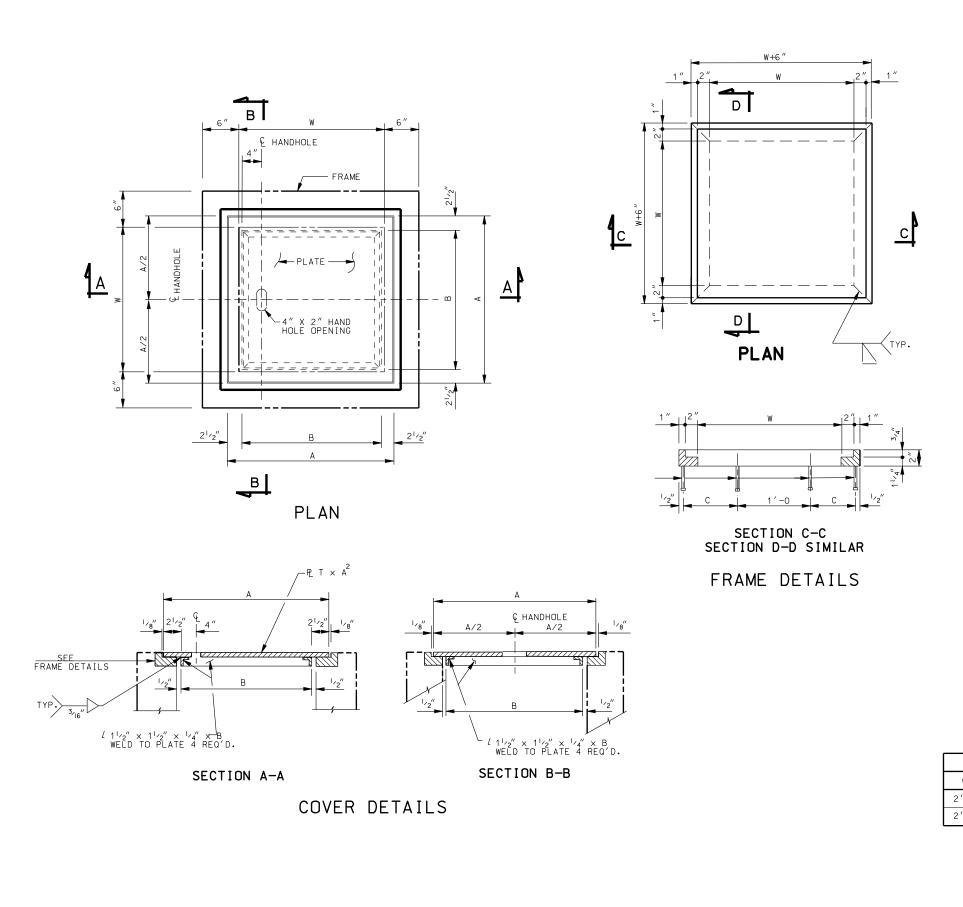
QUANTITIES

(SEE SCHEDULE)

	QU,	ANTIT	IES	
	REINF.	STEEL	CONG	CRETE
L I NE	TRANS- ITION	COLLAR	TRANS- ITION	COLLAR
	Lb.	Lb.	Cu.Yd.	Cu.Yd.
1	29	32.1	0.2614	0.2014
2	35	40.1	0.3351	0.2836
3	47	49.1	0.4219	0.3796
4	64	55.2	0.6174	0.4896
5	90	61.5	0.8587	0.6134
6	115	69.6	1.1392	0.7511
7	133	75.3	1.2887	0.9028
8	43	54.0	0.4503	0.4514
9	50	60.3	0.5325	0.5687
10	77	66.9	0.7429	0.6852
11	107	72.4	1.0151	0.8383
12	115	81.8	1.1100	0.9786
13	150	85.6	1.4140	1.1296

DEPARTMENT OF TRANSPORTATION	DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	ITY, UTAH			JULY 03,2002	DATE	DATE NO. DATE APPR. REMARKS
UTAH DEPARTMENT OF	STANDARD DRAWINGS FOR ROAD			KECUMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE	DEPUTY DIRECTOR
	STANDARD TRANSITION		CONCRETE LINED DITCH	AN PIPE NP		DIVERSION BOX	STANDARD DRAWING TITLE

STD DWG



ALL STRUCTURAL STEEL: STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36. AND HOT DIP GALVANIZE AFTER FABRICATION IN ACCORDANCE WITH ASTM A 123.

DESIGN DATA
THE DESIGN IS IN ACCORDANCE WITH AASHTO AND INTERIM SPECIFICATIONS:

Fs = 20,000 psi
LIVE LOAD - HS 20-44

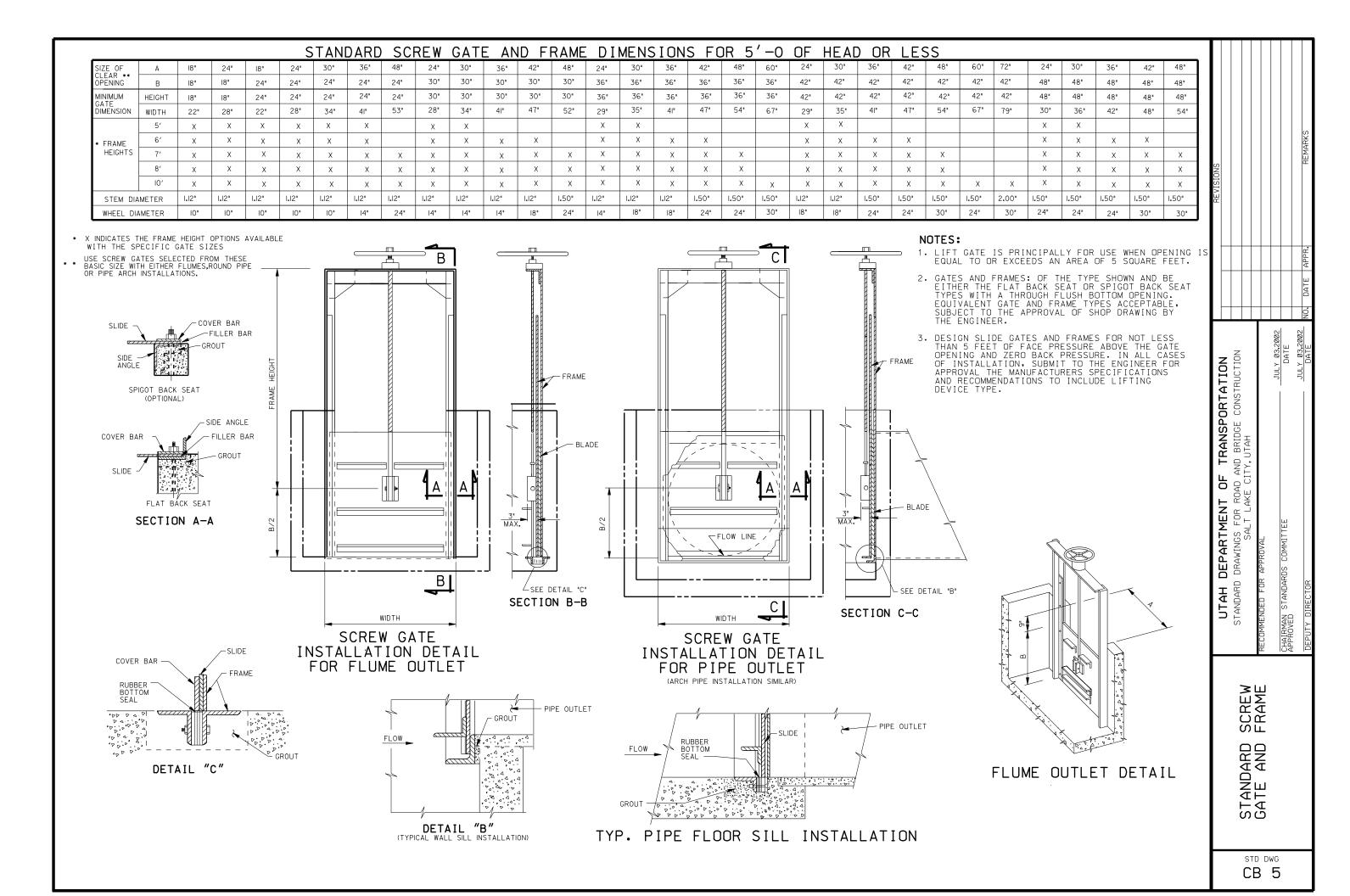
	DIMEN	SIONS			QUANT	ITIES	(LB)
W	А	В	С	Т	COVER	FRAME	TOTAL
2′-0	2'-33/4	1′-10 ³ / ₄	81/2"	1/2"	131	163	294
2′-6	2'-93/4	2'-43/4	111/2"	5/8"	189	195	384

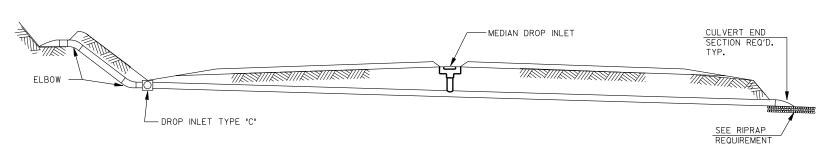
SOLID COVER FOR STD DWG DB 1 MS-18 LOADING

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt lake city, utah

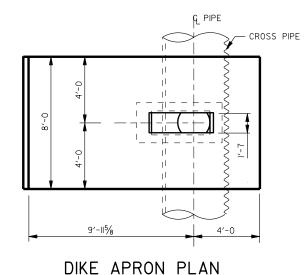
STD DWG

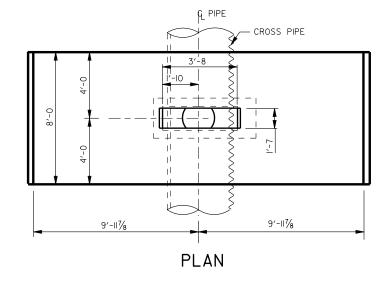
CB 4

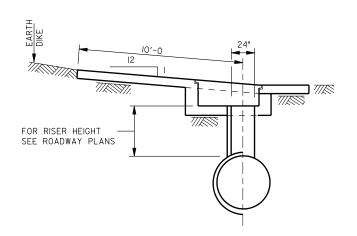


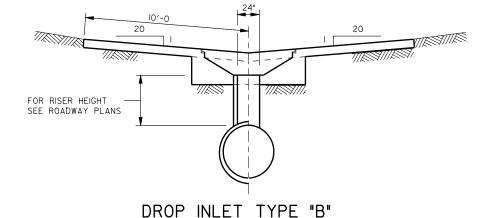


TYP. CROSS SECTION SHOWING MEDIAN DROP INLET AND DROP INLET TYPE "C"









DROP INLET TYPE "A"

DETAILS OF DROP INLET INTO PIPE CULVERT

GENERAL NOTES FOR CB 6A TO CB 6H

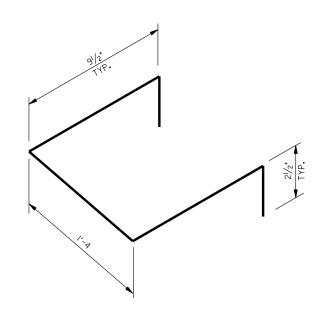
- 1. ALL REINFORCING STEEL: COATED DEFORMED BILLET STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31M GRADE 400.
- 2. USE 24" DIA. PIPE RISER UNLESS OTHERWISE SPECIFIED.
- 3. TYPE II CEMENT (LOW ALKALI) REQUIRED.
- 4. LADDER RUNGS MADE FROM COATED #7 REBAR.
- 5. USE GRATING AND BEARING ANGLES AS DESCRIBED ON STD DWG GF 3
- 6. DEDUCT CONCRETE DISPLACED BY PIPES FROM QUANTITIES GIVEN IN THE APPROPRIATE TABLE.
- 7. ORIENTED GRATES WITH LONGITUDINAL AXIS PARALLEL TO MAJOR FLOW OF DITCH, IN ALL CASES.
- 8. CONSTRUCT AN EARTH DIKE AS PART OF DROP INLET. TYPE "B" DROP INLET DOES NOT REQUIRE ON EARTH DIKE.
- 9. NOT FOR USE WITH EITHER CORRUGATED POLYETHYLENE PIPE OR VITRIFIED CLAY PIPE.
- 10. PLACE A NOTE ON THE PLAN AND PROFILE SHEET CLEARLY DESCRIBING THE TYPE OF DROP INLET REQUIRED. THE RISER DIAMETER WHEN OTHER THAN 24" DIA. AND WHETHER OR NOT AN APRON IS REQUIRED AT THE APPROPRIATE
- 11. USE STRAIGHT #5 REBAR AT 24" CENTERS EXCEPT AS NOTED OTHERWISE. CUT AND FIELD BEND BARS WHERE NECESSARY TO CLEAR PIPES.

DESIGN DATA

HS 20-44 LOADING OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS. fc = 1400 psi $f_{S} = 24000 \text{ psi}$

QUANTITIES

(SEE TABLES)



TYP. LADDER RUNG DETAIL (SEE DROP INLET TYPE "C" AND "D" TABLES)

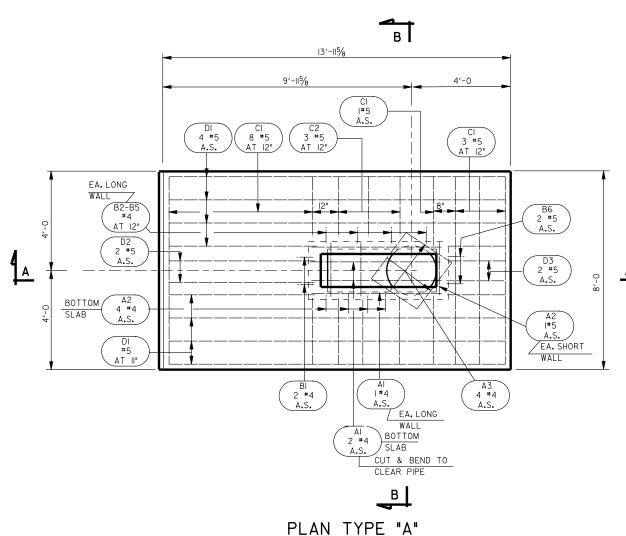
NDARD DROP INLE ETAILS GENERAL NOTES AND TALLATION DETA ANDARI DETAII INST ST

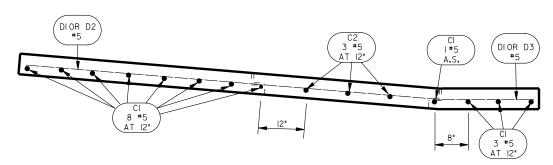
ETAIL

STD DWG

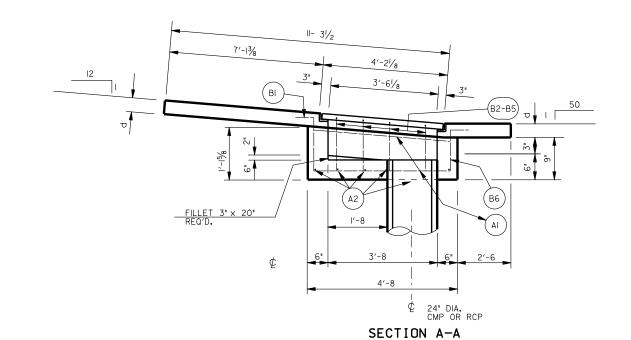
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah

CB 6A



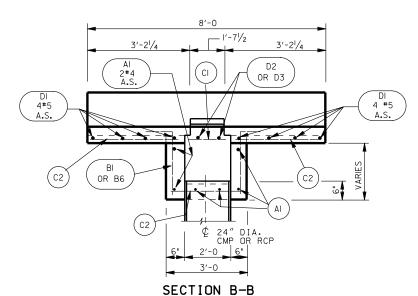


TYP. LONGITUDINAL APRON SECTION (FOR TYPE "A" DROP INLET)



NOTES:

- 1. CENTER APRONS ON DITCH.
- 2. PLACE 6" OF UNTREATED BASE COURSE AND COMPACT TO THE DENSITY INDICATED BY UDOT STANDARD SPECIFICATIONS UNDER EACH SLAB PRIOR TO FORMING.
- 3. FIELD BEND D1 BARS AS REQUIRED TO CONFORM TO SLOPE.
- 4. FOUR STANDARD ANCHOR BOLTS 3 / 4 DIA. X 6" REQUIRED. SPACE 19"+/- ON PERIPHERY OF CMP PIPE RISER AND POSITION THEM 3" FROM END OF SAID RISER. ANCHOR BOLTS AND NUTS. INCLUDE PAYMENT FOR FURNISHING AND PLACING GALVANIZE ANCHOR BOLTS AND NUTS IN THE PRICE PER LINEAR FOOT OF PIPE.
- 5. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.

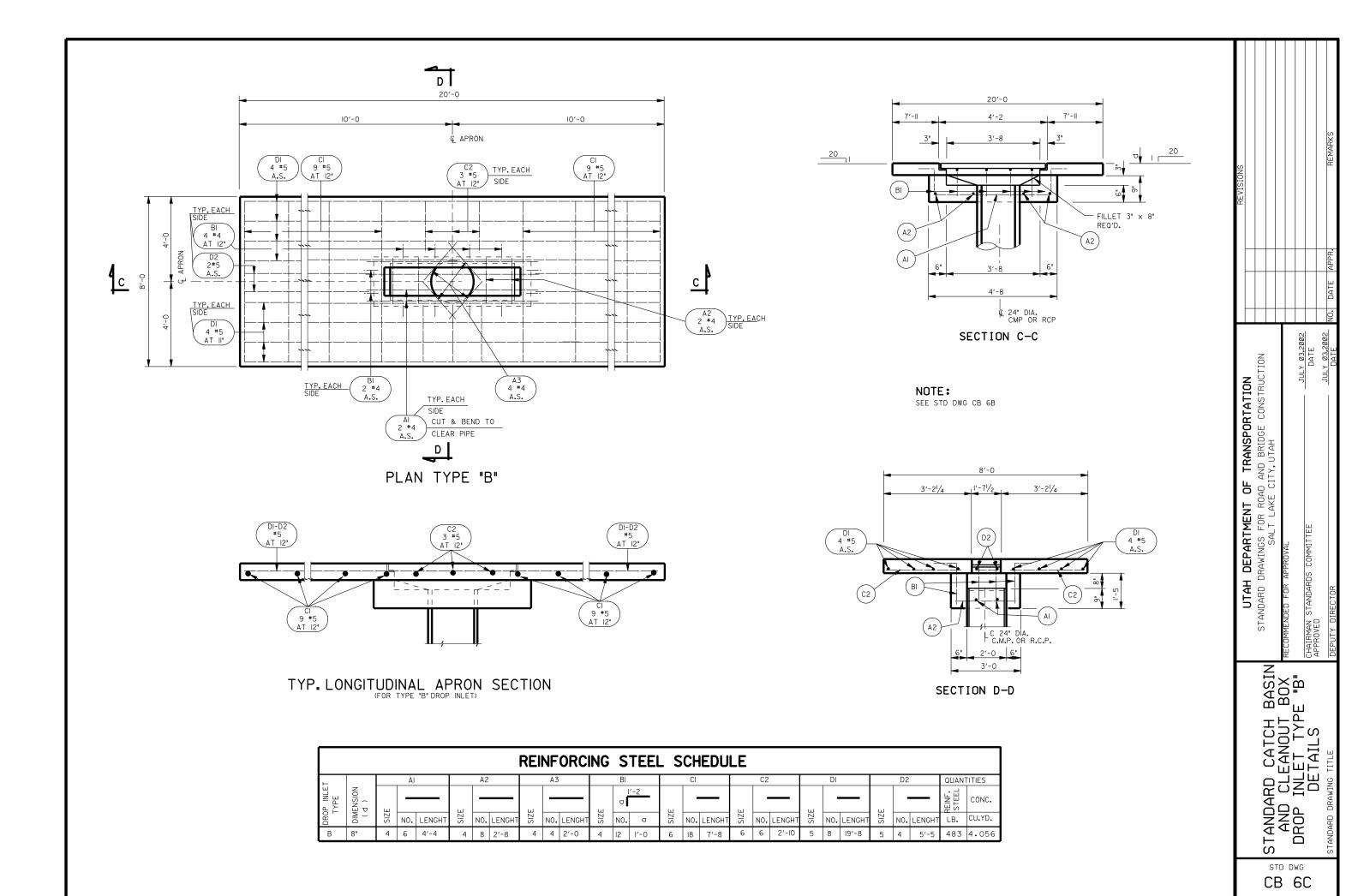


							REINF	ORCING S	TEEL SCH	HEDULE						
—	AI A2 A3 BI B2 B3 B4 B5 B6 CI C2 DI D2 D3 QUANTITIES															
DROP INLE TYPE	DIMENSION (d)	ZZ NO. LENGT	H ZIS NO. LENGTH	JZIS NO. LENGTH	J'-2 D NO. a	No. a	3/2 NO. a	3ZZ NO. a	NO. a	3ZS NO. 0	ZZ NO. LENGTH	NO. LENGTH	JZIS NO. LENGTH	3 SIS NO. LENGTH	JZ NO. LENGT	TH LB. CU.YD.
A	8"	4 5 4'-4	4 5 2′-8	4 4 2'-0	4 2 1'-6	4 2 1′-5	4 2 1'-4	4 2 1′-3	4 2 1'-2	4 2 1'-0	6 12 7'-8	6 6 2'-10	5 8 13′-8	5 2 5′-5	5 2 3'-8	359 2.919

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah CHAIRMAN APPROVED STANDARD CATCH BASIN AND CLEANOUT BOX DROP INLET TYPE "A"

STD DWG

CB 6B



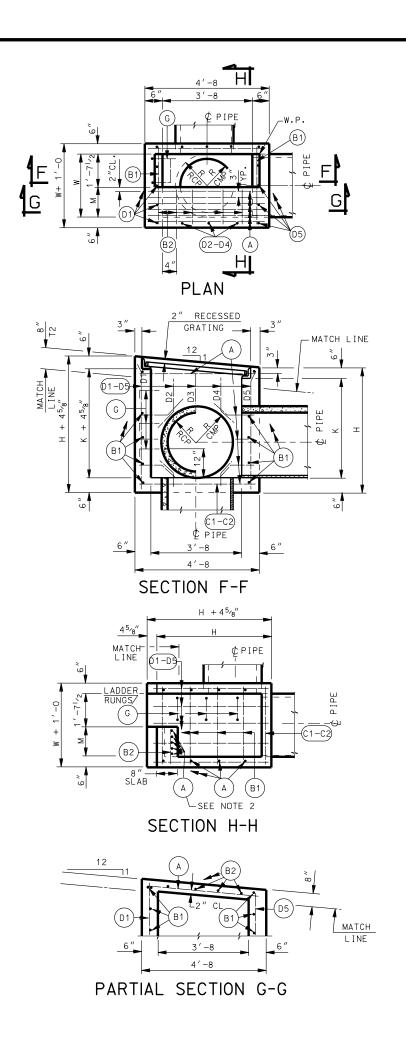
																		TAB	LE	#1													
												MAX	· PI	PΕ	SIZ	ZES	:	18″ D	ΙA	. RCP	OR	24" [ΔIα	. CMP							AUQ	ITITIES	
NO.	DI	MENS	NOI	IS												RE	ΞIΝ	FORC	IN	SSTE	ΕL									STAND	IARD	W/AT APF	
뵘	Н	k	W	Т	М		Α		B1		B2	2	C1			C2		D1		D2		D3		D4		D5		G		REINF. STEEL	CONC.	REINF.	CONC.
5		^	٧٧		111	LEN	IGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO	. LEN	STH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LB.	CU.YD.	STEEL LB.	CU.YD.
1	3′-6	2′-6	2'-	Ø 4	1/2"	4′-	-4	9	2′-8	8	6"	4	4'-4	2	2′-	-8	4	3′-5	4	3'-4	2	3′-3	2	3′-2	2	3'-1	4	3'-4	2	143	1.067	437	3,456
2	4'-0	3′-Ø	A		A	A	١	11	A	10	A	A	A	A	1	1	4	3′-11	A	3′-1Ø	A	3′-9	A	3′-8	A	3′-7	4	A	3	170	1.190	464	3.579
3	4'-6	3′-6						11		10				П				4′-5		4'-4		4'-3		4'-2		4'-1			3	177	1.313	471	3.702
4	5′-0	4'-0						13		12				П				4'-11		4'-10		4'-9		4′-8		4′-7			4	197	1.437	491	3.826
5	5′-6	4′-6						13		12				П				5′-5		5′-4		5′-3		5′-2		5′-1			4	211	1.560	5Ø5	3.949
6	6′-Ø	5′-Ø						15		14		П		П			П	5′-11		5′-1Ø		5′-9		5′-8		5′-7			5	238	1.684	532	4.073
7	6′-6	5′-6		T				15		14		П		П			Т	6′-5	П	6'-4	П	6′-3	П	6′-2		6′-1	Т		5	245	1.807	539	4.196
8	7′-0	6′-Ø						17		16				П				6'-11		6′-1Ø		6′-9		6′-8		6′-7			6	272	1.931	566	4.320
9	7′-6	6′-6						17		16				П				7′-5		7′-4		7′-3		7′-2		7′-1			6	279	2.054	573	4.443
10	8′-Ø	7′-0						19		18				П				7′-11		7′-1Ø		7′-9		7′-8		7′-7			7	3Ø6	2.178	600	4.567
11	8′-6	7′-6	1		*	1	1	19	1	18	1	1	*		1	7	1	8′-5	1	8′-4	•	8′-3	1	8′-2	*	8′-1	1	V	7	314	2.301	6Ø8	4.690
12	9'-0	8′-Ø	2'-	Ø 4	11/2"	4'-	-4	21	2′-8	20	6"	4	4'-4	2	2′	-8	4	8′-11	4	8'-10	2	8′-9	2	8′-8	2	8′-7	4	3'-4	8	341	2,425	635	4.814

															TABL	Ε	#2													
										MAX	. PIF	E:	SIZES	:	24″ D	ΙA	• RCP	OR	30" [ΔIΑ	. CMP							MAUQ	TITIES	
NO.	DI	MENS	SION	S									R	EIN	IFORCI	NO	G STE	EL									STAND	ARD	W/AT APR	
IN.	Н	К	W	м	Α		B1		В2	-	C1		C2	-	D1		D2		D3		D4		D5	_	G		REINF. STEEL	CONC.	REINF. STEEL	CONC.
Π					LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LB.	CU.YD.	LB.	CU.YD.
1				_	I	_	_	—		_		_		_		_	—	—		_		_		—						
2	4'-0	3′-Ø	2′-6	101/2"	4'-4	13	3′-2	10	1'-Ø	4	4'-4	2	3′-2	4	3'-11	4	3′-1Ø	2	3′-9	2	3′-8	2	3′-7	4	3'-4	3	188	1.347	471	3.679
3	4′-6	3′-6	A	A	A	13	A	10	A	A	A	A	A	A	4'-5	4	4'-4	A	4'-3	A	4'-2	A	4'-1	A	A	3	195	1.480	478	3.812
4	5′-Ø	4'-0				15		12						П	4'-11	Т	4'-10	П	4'-9		4′-8		4′-7			4	223	1.612	5Ø6	3.944
5	5′-6	4′-6				15		12				П		П	5′-5	Т	5′-4		5′-3		5′-2		5′-1			4	230	1.745	513	4.077
6	6′-Ø	5′-0				17		14				П			5′-11	Т	5′-1Ø	П	5′-9	П	5′-8		5′-7			5	258	1.878	541	4.210
7	6′-6	5′-6				17		14							6′-5		6'-4		6′-3		6′-2		6′-1			5	266	2,010	549	4.342
8	7′-Ø	6′-Ø				19		16						П	6′-11	Т	6′-1Ø	П	6′-9		6′-8		6′-7			6	294	2.143	577	4.475
9	7′-6	6′-6				19		16							7′-5		7′-4		7′-3		7′-2		7′-1			6	3Ø1	2.276	584	4.608
1Ø	8′-Ø	7′-Ø				21		18				П			7′-11	Τ	7′-1Ø		7′-9		7′-8		7′-7			7	329	2,409	612	4.741
11	8′-6	7′-6	₩	▼	l v	21	1	18	1	1	1	1	♦	1	8′-5	V	8′-4	1	8′-3	V	8′-2	1	8′-1	1	1	7	336	2,541	619	4.873
12	9'-0	8′-Ø	2'-6	101/2"	4'-4	23	3′-2	20	1'-Ø	4	4'-4	2	3'-2	4	8'-11	4	8′-1Ø	2	8′-9	2	8′-8	2	8′-7	4	3′-4	8	364	2.974	647	5.006

																	TAB	LE	#3													
											MAX	. PII	PE.	SI	ZES	:	30″ D	ΙA	. RCP	OR	36" [ΙA	. CMP							AUQ	NTITIES	
NO.	DI	MENS	IONS	5											RE	EIN	FORC:	ΙN	G STE	EL									STAND	IARD	W/AT API	T′CH RON
INE	I	K	W	М	-	4		B1		В2		C1			C2		D1		D2		D3		D4		D5	5	G		REINF.	CONC.	REINF.	CONC.
5	I	1	**	101	LENG1	TH NO.	. LEN	GTH	NO. L	ENGTH	NO.	LENGTH	NO.	LEN	1GTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	STEEL LB.	CU.YD.	STEEL LB.	CU.YD.
1	4′-6	3′-6	3′-Ø	1'-4½	4'-4	4 15	3′-	8 1	10	1′-6	4	4'-4	2	3,	-8	4	4′-5	5	4'-4	2	4′-3	2	4'-2	2	4'-1	5	3'-4	3	223	1.646	493	3.920
2	5′-0	4'-0	A	A	▲	17		1	12	4	▲	A	A		A	4	4'-11	A	4′-1Ø	A	4′-9	A	4′-8	4	4′-7	 	A	4	252	1.788	522	4.062
3	5′-6	4′-6				17		1	12								5′-5		5′-4		5′-3		5′-2		5′-1			4	261	1.930	531	4.204
4	6′-Ø	5′-Ø				19		1	14								5′-11		5′-1Ø		5′-9		5′-8		5′-7			5	291	2.072	561	4.346
5	6′-6	5′-6				19		1	14								6′-5		6′-4		6′-3		6′-2		6′-1			5	299	2.214	569	4.488
6	7′-Ø	6′-Ø				21		1	16				П				6′-11	П	6′-1Ø		6′-9		6′-8		6′-7			6	329	2.356	599	4.630
7	7′-6	6′-6				21		1	16								7′-5	П	7′-4		7′-3		7′-2		7′-1			6	338	2.498	6Ø8	4.772
8	8′-Ø	7′-Ø				23	3 🗆	1	18								7′-11		7′-1Ø		7′-9		7′-8		7′-7			7	368	2.640	638	4.914
9	8′-6	7′-6		*	*	23			18	1	*				†	*	8′-5	*	8'-4		8′-3	1	8′-2	*	8′-1	1		7	376	2.781	646	5.055
10	9'-0	8′-Ø	3'-0	1'-41/2	4'-4	4 25	3′-	-8 2	20	1′-6	4	4'-4	2	3	′-8	4	8'-11	5	8'-10	2	8'-9	2	8'-8	2	8′-7	5	3'-4	8	4Ø6	2,923	676	5,197

																	TAB	LE	#4													
											MAX	(. PI	PΕ	SI	ZES	:	36" [ΙA	• RCP	OR	42" [DΙΔ	. CMP							1AUQ	NTITIES	
NO.	IID	MENS	IONS	5											R	EIN	FORC	INC	SSTE	EL									STANE	DARD	W/AT APF	
INE	н	V	W	М		Α	Т	B1		B2	2	[C:		Т	C2		D1		D2		D3		D4		D	5	G		REINF.	CONC.	REINF.	CONC.
=	''	IX	"	1:1	LENG	TH NO	. LE	ENGTH	NO.	LENGTH	NO.	LENGTH	NO	· LE	NGTH	NO.	LENGTH	NO.	LENGTH	NO.	STEEL LB.	CU.YD.	STEEL LB.	CU.YD.								
1	—— [_	_	- -	- -		-		—		1-			_		\vdash		_		<u> </u>			I	\vdash	l —	-		1	II	
2	5′-Ø	4'-0	3′-6	1′-10½	4'-	4 17	4	·-2	12	2′-Ø	4	4'-4	4	4	′-2	4	4'-11	5	4′-1Ø	2	4'-9	2	4′-8	2	4'-7	5	3'-4	4	272	1.963	542	4.180
3	5′-6	4′-6	 	A	 	17		A	12	4	 	A	A		A	A	5′-5	A	5′-4	A	5′-3	A	5′-2	A	5′-1	 	A	4	28Ø	2.114	550	4.331
4	6′-Ø	5′-0				19			14				П				5′-11		5′-1Ø		5′-9		5′-8		5′-7	П		5	312	2,266	582	4.483
5	6′-6	5′-6				19			14								6′-5		6'-4		6′-3		6′-2	П	6′-1	П		5	320	2.417	590	4.634
6	7′-Ø	6′-Ø				21	Т		16				П				6′-11	П	6′-1Ø		6′-9		6′-8	П	6′-7	П		6	351	2,568	621	4.785
7	7′-6	6′-6				21	Т		16		П		П				7′-5	П	7′-4	П	7′-3	П	7′-2	П	7-′1	П		6	359	2.719	629	4.936
8	8′-Ø	7′-Ø				23	3		18				П				7′-11	П	7′-1Ø		7′-9		7′-8		7′-7	П		7	390	2.870	660	5.087
9	8′-6	7′-6	•	Ť		23	3	*	18	1	1		1		•		8′-5	1	8'-4	V	8′-3	1	8'-2	V	8'-1	1	7	7	399	3.022	669	5.239
10	9'-0	8'-0	3′-6	1'-101/2	4'	4 25	5 4	1'-2	20	2'-0	4	4'-4	4	4	′-2	4	8'-11	5	8'-10	2	8'-9	2	8'-8	2	8′-7	5	3'-4	8	430	3,173	700	5.390

- 1. FOR TYPICAL FLOOR PLAN SEE STD DWG CB 6G AND CB 6H
- 2. PLACE 1-"A" BAR OR 3-"A" BARS AT 3" SPACING ADJACENT TO OPENING IN TOP SLAB OF BOX DESCRIBED BY TABLE 1 AND TABLE 2, RESPECTIVELY, PLACE 5-"A" BARS AT 3" SPACING AS PREVIOUSLY DESCRIBED IN ALL OTHER TABLES. ALL ADDITIONAL BARS, WHERE APPLICABLE, ARE SPACED AT 1'-O MAX.
- 3. THE OPTION- W/ATT'CH APRON IS BASED ON MODIFYING THE STANDARD BOX SHOWN. DELETE THE TOP SLAB WITH THE APPROPRIATE REINFORCING STEEL AND REPLACE IT WITH ONE OF THE APRONS SHOWN ON STD DWG CB 6E



JULY Ø3,2ØØ2 DATE

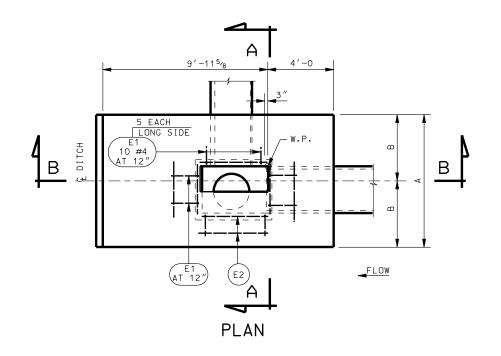
DEPARTMENT OF TRANSPORTATION
DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

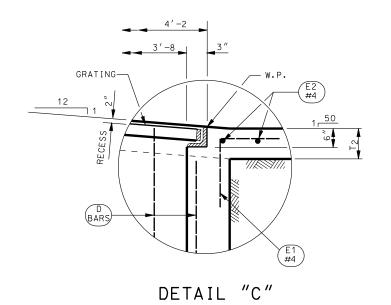
UTAH [Standard [

STANDARD CATCH BASIN AND CLEANOUT BOX REDROP INLET TYPE "C" CETAILS

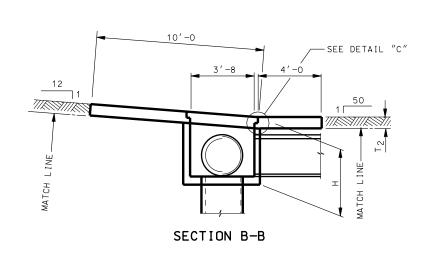
STD DWG

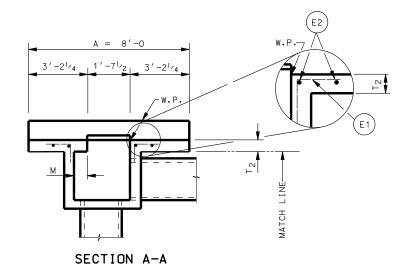
CB 6D





- 1. EACH LINE REPRESENTS ONE COMPLETE STRUCTURE OF THE KIND SPECIFIED. LINE AND TABLE NUMBERS WITHIN THE DRAWING SET CORRESPOND. BASIC DROP INLET BOX DIMENSIONS AND REINFORCEMENT DETAILS BELOW MATCH LINE ARE GIVEN IN TABLES 1 THRU 4, AND TABLES 5 THRU 9 OF THE TYPE SPECIFIED. EXTEND ALL WALL REBAR INTO ATTACHED APRON.
- 2. ALL BARS (INCLUDING 3 #4 BARS) ARE STRAIGHT UNLESS OTHERWISE SHOWN.
- 3. FOR M, M1 AND M2 DIMENSIONS SEE TYPE "C" AND "D" DIMENSIONS SCHEDULES STD DWG CB 6D AND CB 6H.





Al	PRON [DIMENSION	S
TABLE NO). T ₂	А	В
1 THRU	4 8"	8′-0	4′-0
5	9"	8′-0	4′-0
6	9"	9'-41/2	4'-81/4
7	10"	10'-41/2	5'-21/4
8	10"	11'-41/2	5'-81/4
9	10"	12'-41/2	6'-21/4

APRON OPTION DETAILS (DROP INLET TYPE "C")

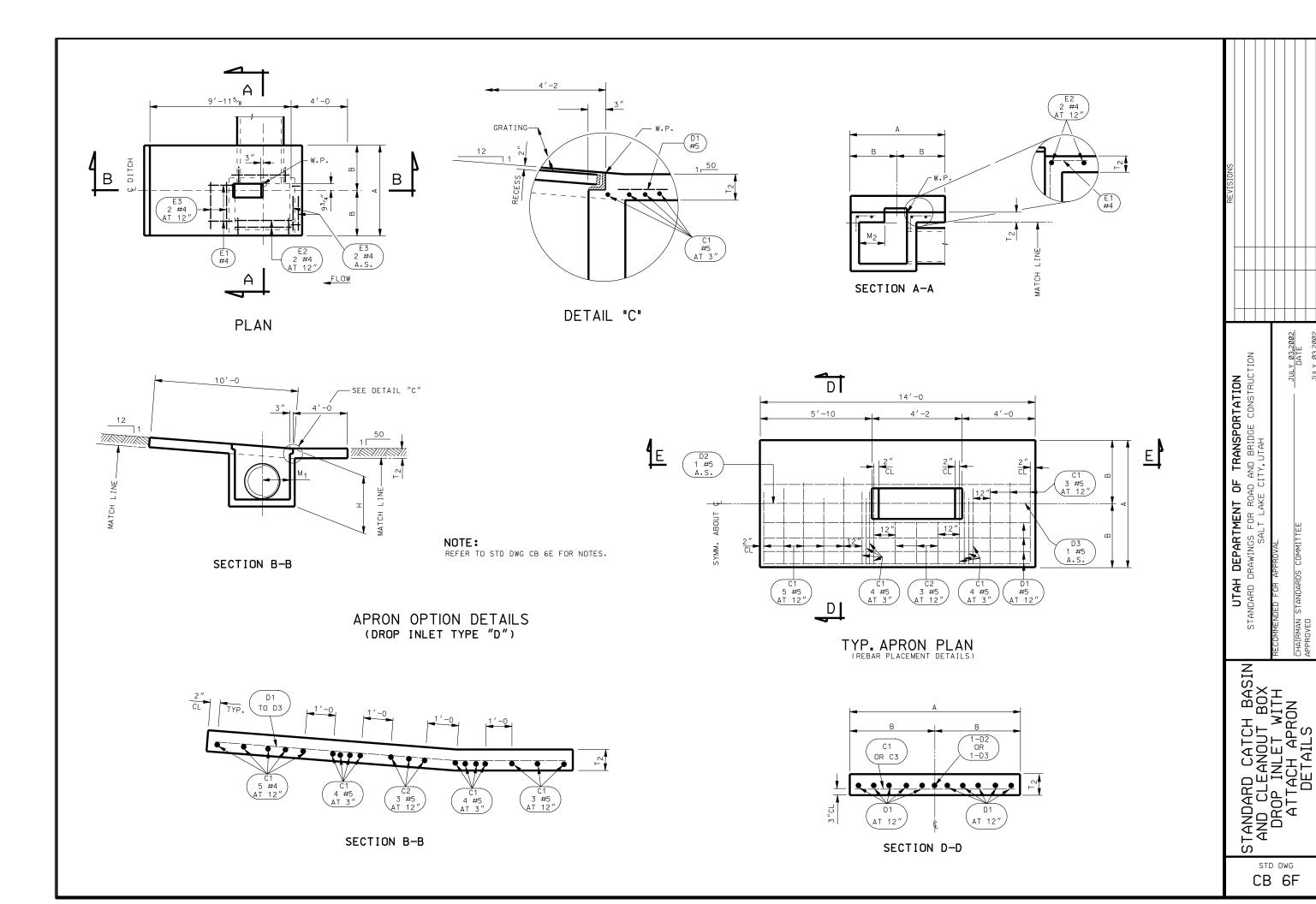
										-	4PR	ON F	REINF	ORCINO	S	TEE	L S	CHEDL	JLE										
	AP		E USED W: 1 THRU 4	ITH		API		BE USED W BLE 5	/ITH		APR	ON TO BI TABLI	E USED WI E 6	TH		AP		BE USED V LE 7	WITH		Al	PRON TO I	BE USED LE 8	WITH		APF	RON TO B TABL	E USED W E 9	ITH
MAR	K NO.	LENGTH	TOTAL LENGTH	TOTAL WT. PER APRON	MARK	NO.	LENGTH	TOTAL LENGHTH	TOTAL WT. PER APRON	MARK	NO.	LENGTH	TOTAL LENGTH	TOTAL WT. PER APRON	MARK	NO.	LENGTH	TOTAL LENGTH	TOTAL WT. PER APRON	MARK	NO.	LENGTH	TOTAL LENGTH	TOTAL WT. PER APRON	MARK	NO.	LENGTH	TOTAL LENGTH	TOTAL WT. PER APRON
C1 C2 D1 D2 D3 E1 E2 E3		7'-8 2'-10 13'-8 5'-9 3'-11 2'-4 3'-8 3'-0	122'-8 17'-0 109'-4 5'-9 3'-11 32'-8 7'-4 6'-0	301 LB.	C1 C2 D1 D2 D3 E1 E2 E3	16 6 8 1 1 16 2	7'-8 2'-10 13'-8 5'-9 3'-11 2'-4 4'-0 4'-0	122'-8 17'-0 109'-4 5'-9 3'-11 37'-4 8'-0 8'-0	306 LB•	C1 C2 D1 D2 D3 E1 E2 E3	16 6 10 1 1 20 2	9'-0 3'-6 13'-8 5'-9 3'-11 2'-4 5'-0 5'-0	144'-0 21'-0 136'-8 5'-9 3'-11 46'-8 10'-0 10'-0		C1 C2 D1 D2 D3 E1 E2 E3	16 6 10 1 1 24 2	10'-0 4'-0 13'-8 5'-9 3'-11 2'-4 5'-6 5'-6	5'-9 3'-11 56'-0 11'-0	397 LB.	C1 C2 D1 D2 D3 E1 E2 E3	16 6 10 1 1 24 2	11'-0 4'-6 13'-8 5'-9 3'-11 2'-4 6'-0 6'-0	176'-0 27'-0 136'-8 5'-9 3'-11 56'-0 12'-0 12'-0	418 LB•	C1 C2 D1 D2 D3 E1 E2 E3	16 6 12 1 1 28 2	12'-0 5'-0 13'-8 5'-9 3'-11 2'-4 6'-6 6'-6	192'-0 30'-0 164'-0 5'-9 3'-11 65'-4 13'-0 13'-0	474 LB.
														2-,-	-2														

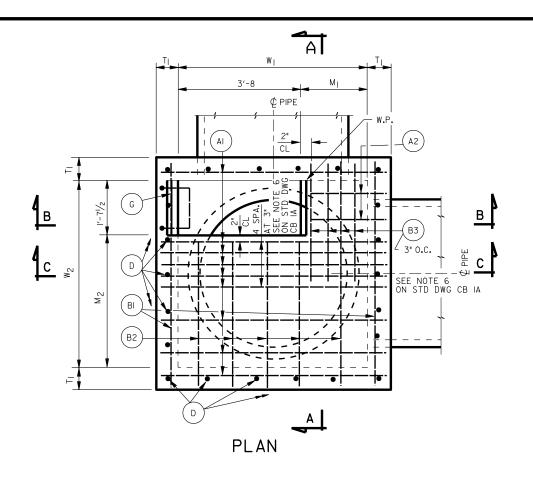
E1 BAR

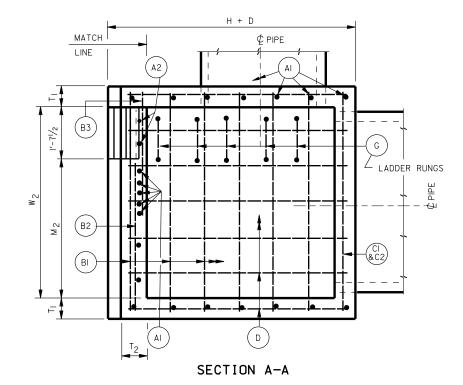
STANDARD CATCH BASIN
AND CLEANOUT BOX
DROP INLET WITH
ATTACHED APRON
DETAILS

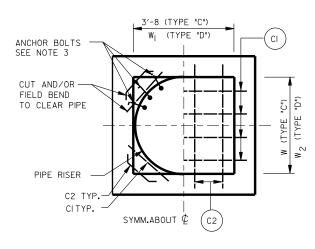
CB 6E

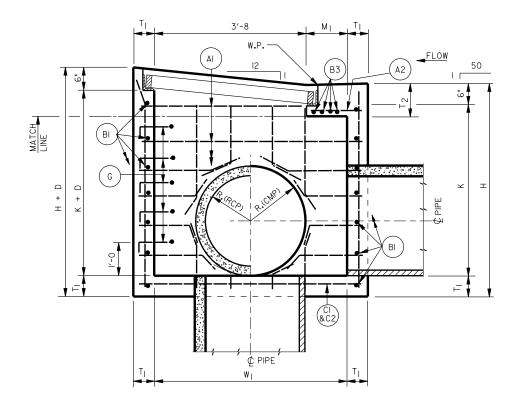
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and bridge construction Salt lake city, utah JULY Ø3,2002 DATE



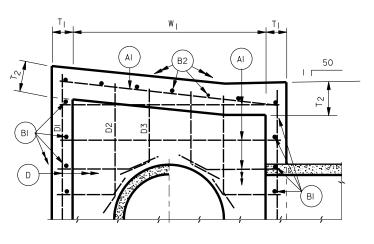




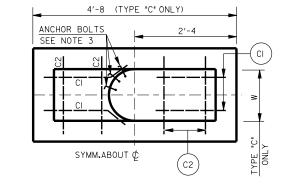




SECTION B-B



PARTIAL SECTION C-C



TYP. FLOOR PLAN WITH/ WITHOUT PIPE RISER (DROP INLET FOR TYPE "C" & "D")

- 1. FOR REINFORCING STEEL AND CONCRETE QUANTITIES SEE STD DWG CB 6H
- 2. PLACE 5-A1 AND 5-B3 BARS AT 3" SPACING FROM OPENING IN TOP SLAB OF EACH BOX. SPACE ALL ADDITIONAL BARS. WHERE REQUIRED. AT 12" MAX.O.C. IN TABLE #5 ONLY 1-B3 BAR IS REQUIRED FOR EACH BOX. SPACE ALL OTHER BARS AS PREVIOUSLY DESCRIBED.
- 3. PLACE IN FLOOR OF BOX AROUND THE PERIPHERY OF EACH CMP RISER. STANDARD ANCHOR BOLTS 3/4" x 6" ON 24 INCH CENTERS. POSITION ANCHOR BOLTS 3" FROM END OF RISER. ANCHOR BOLTS AND NUTS: CONFORM TO ASTM SPECIFICATION A 307 AND A 563, GRADE C, RESPECTIVELY. INCLUDE PAYMENT FOR FURNISHING AND PLACING ANCHOR BOLTS AND NUTS IN THE PRICE PER LINEAR FOOT OF PIPE.

STANDARD CATCH BASIN
AND CLEANOUT BOX
DROP INLET TYPE "D"

CHAIRMAN SHORED

STD DWG CB 6G

JULY 03,2002 DATE

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt Lake City, Utah

_																																						
																	Т	۱BL	F 4	‡ 5																		
																	' '	100																				
														M	ΑX. Ι	PIPE	SIZE	S : 42	" DIA	. RCP	OR	48" D	ΙΑ. (CMP			D =	5",T	= 6",T ₂	2 = 9"	ш					QUAI	NTITIES	
ON.			IMENS	SIONS																RE	INF	FORC	ING	STEE	_										STAN	NDARD		TT'CH RON
LINE	Н	К	w ₁	м ₁	W ₂	M 2	A LENGTH		A2 ENGTH	NO LE	B1 NGTH N	O LENG	32 H NO		3 H NO	LENG	C1 TH NC	LENGT	2 H NO	D1 LENGTH	NO	D2 LENGTH	NO	D3 LENGTH N	D4	NO LEN	D5 TH NO	I LENGT	H NO LEN	D7 GTH NC		08 H	G I FNGTH	1 NO	REINF. STEEL I B.	CONC.	REINF. STEEL I B.	CONC.
1	5′-6	4′-6	4'-Ø	Ø'-4	4′-Ø	2'-41/2		18			·′-8 12			3′-Ø	1	4'-8	3 4	4′-8	4	5′-6	5	5′-5	2	5′-4 2	5′-3				/ \	/	/ \	/	3'-4	4	3Ø8	2,464	578	4.851
2	6′-Ø	5′-Ø	A	A	A	↓	A	20		$/\top$	A 14	4	A	A	A	A	A	A	4	6′-Ø	A	5′-11	4	5′-10	5′-9	Å 5′-	8		1/ 1 \	-1/		1/	A	4	325	2,631	595	5.018
3	6′-6	5′-6						20			14	1								6`-6		6′-5		6'-4	6′-3	6′-	2					7		5	349	2,797	619	5.184
4	7′-Ø	6′-Ø						22	M		16	6								7′-Ø		6′-11		6′-1Ø	6′-9	6′-	8	\	Λ	M		Λ		5	377	2.964	647	5.351
5	7′-6	6′-6						22	$-\Lambda$		16	3								7′-6		7′-5		7′-4	7′-3	7′-	2			Λ		$\sqrt{}$		6	39Ø	3.131	660	5.518
6	8′-Ø	7′-Ø						24			18	3								8′-Ø		7′-11		7′-1Ø	7′-9	7′-	-8					1		6	418	3.297	688	5.684
7	8′-6	7′-6	🛊	🔻	♦	▼	I ▼	24	$/ \Box$	$\backslash T$	18	3 🔻	1	I ▼	1	1	1	♦	1	8′-6	†	8′-5	▼	8′-4	8'-3	8'	2	$\perp 7$	$1 \setminus 7$		17		🛊	7	431	3,464	7Ø1	5.851
8	9′-0	8′-Ø	4'-0	Ø′-4	4'-0	2'-41/2	4′-8	26 /	/	\	4′-8 2	Ø 2'-6	4	3′-Ø	1	4'-8	3 4	4′-8	4	9′-Ø	5	8′-11	2	8'-10 2	8′-9	2 8'-	8 5	7/			\		3′-4	7	459	3,631	729	6.018

															T	ABLE	E #6															CU.YD.	
													МА	X. PIP	E SIZ	ES:4	8" DIA.	RCP	OR 60'	DIA.	. CMP			D :	= 6",T	= 6",T ₂	= 9"				QU	ANTITIES	;
ON.			IMENS	SIONS														REIN	NFORC	ING	STEEL	_								S	TANDARD		TT'CH PRON
INE	Н	K	W ₁	M ₁	W ₂	M 2	A1	A2	NO LE	B1	B2		B3	10 1 51/	C1	C	2	D1	D:	NO 5	D3	D4 LENGTH NO	D5	NO I	D6	D7	_	.חן איט 80	G	REI STE	NF. CONC	REINF. STEEL	CONC.
$\frac{1}{1}$	6′-6	5′-6	5′-0	1'-4	5′-0	+		1'-5		-8 14	3'-6	-		5 5'-	-	5'-8	4 6'-		6'-5	2	6'-4 2	6'-3 2	_		6'-1 6	LENGINI	/ LENGI	/ /	3'-4	5 4			3.345
2	7′-Ø	6′-Ø	A	4	A	A	1 23	A	Ā	16	A	A .	A .	A A	A	A		-Ø A	6'-11	A	6′-1Ø Å	6'-9			6'-7		\leftarrow	1/	A .	5 4			6.549
3	7′-6	6′-6					23			16							7'-	-6	7′-5		7′-4	7′-3	7′-2		7′-1			$\sqrt{}$		6 4'	97 4.136	763	6.752
4	8′-Ø	7′-Ø					25			18							8′-	-Ø	7′-11		7′-1Ø	7′-9	7′-8		7′-7			\mathcal{I}		6 5	30 4.340	796	6.956
5	8′-6	7′-6	†	*	†	▼	25	†	*	18	†	*	†	7 7	1	▼	₹ 8′-	-6	8′-5	1	8'-4	8′-3	8'-2	V	8'-1		\Box		†	7 5·		812	7.160
6	9'-0	8'-Ø	5′-0	1'-4	5′-0	3'-41/2	5′-8 27	1'-5	2 5	-8 20	3′-6	5	3′-Ø	5 5'-8	3 4	5′-8	4 9'-	-Ø 6	8'-11	2	8'-10 2	8'-9 2	8′-8	2	8'-7 6	5 /	\		3′-4	7 5	30 4.748	846	7.364

Γ												T.	ABLE	#7												
Г											MAX	K. PIPE SI	ZES :54"	DIA.RCP (OR 66" DIA	CMP			$D = 6\frac{1}{2}$	e",T = (6",T ₂ = IC)"		QUAI	NTITIES	
9		[DIMENS	SIONS										REIN	FORCIN	STEEL							STA	NDARD		TT′CH RON
岁							A1	A2	B1	B2	В3	C1	C2	D1	D2	D3	D4	D5	D6	D7	D8	G	REINF.	CONC.	REINF.	CONC.
]]	Н	K	W ₁	M ₁	W ₂	M 2	LENGTH NO	LENGTH N	IO LENGTH N	O LENGTH NO) NO) N	LENGTH N	D1 O LENGTH NO	LENGTH NO	LENGTH NO	LENGTH NO	LENGTH NO	LENGTH NO	LENGTH N	O LENGTH N	O LENGTH N	T SIEE.	CU.YD.	REINF. STEEL LB.	CU.YD.
1	7′-Ø	6′-Ø	5′-6	1′-1Ø	5′-6	3'-101/2	6'-2 23	1'-11	2 6'-2 1	6 4'-Ø 6	3'-Ø 5	6′-2 4	6′-2	7′-1 7	7′-Ø 2	6'-11 2	6'-10 2	6′-9 2	6'-8 2	6'-7	7 \	/ 3'-4 5	543	4.529	854	7.678
2	7′-6	6′-6	A	A	A	A	4 23	 	Å	6 4 4		A A	A A	7′-7	7′-6	7′-5	7′-4	7′-3	7′-2	7'-1		♦ 6	561	4.751	872	7.900
3	8′-Ø	7′-0					25		1	3				8'-1	8'-Ø	7'-11	7′-10	7′-9	7′-8	7′-7		Ε Ε	599	4.973	910	8.122
4	8′-6	7′-6	🔻	🔻	l V	🔻	† 25		V V 18	3 🔻 🔻		🔻 🔻		8′-7	8′-6	8′-5	8′-4	8′-3	8′-2	8'-1		♥ 7	616	5.196	927	8.345
5	9′-Ø	8′-Ø	5′-6	1'-10	5′-6	3'-101/2	6'-2 27	1'-11	2 6'-2 2	Ø 4'-Ø 6	3'-Ø 5	6'-2 4	6'-2	4 9'-1 7	9'-0 2	8'-11 2	8'-10 2	8'-9 2	8'-8 2	8'-7	7 /	3'-4 7	655	5.418	966	8.567

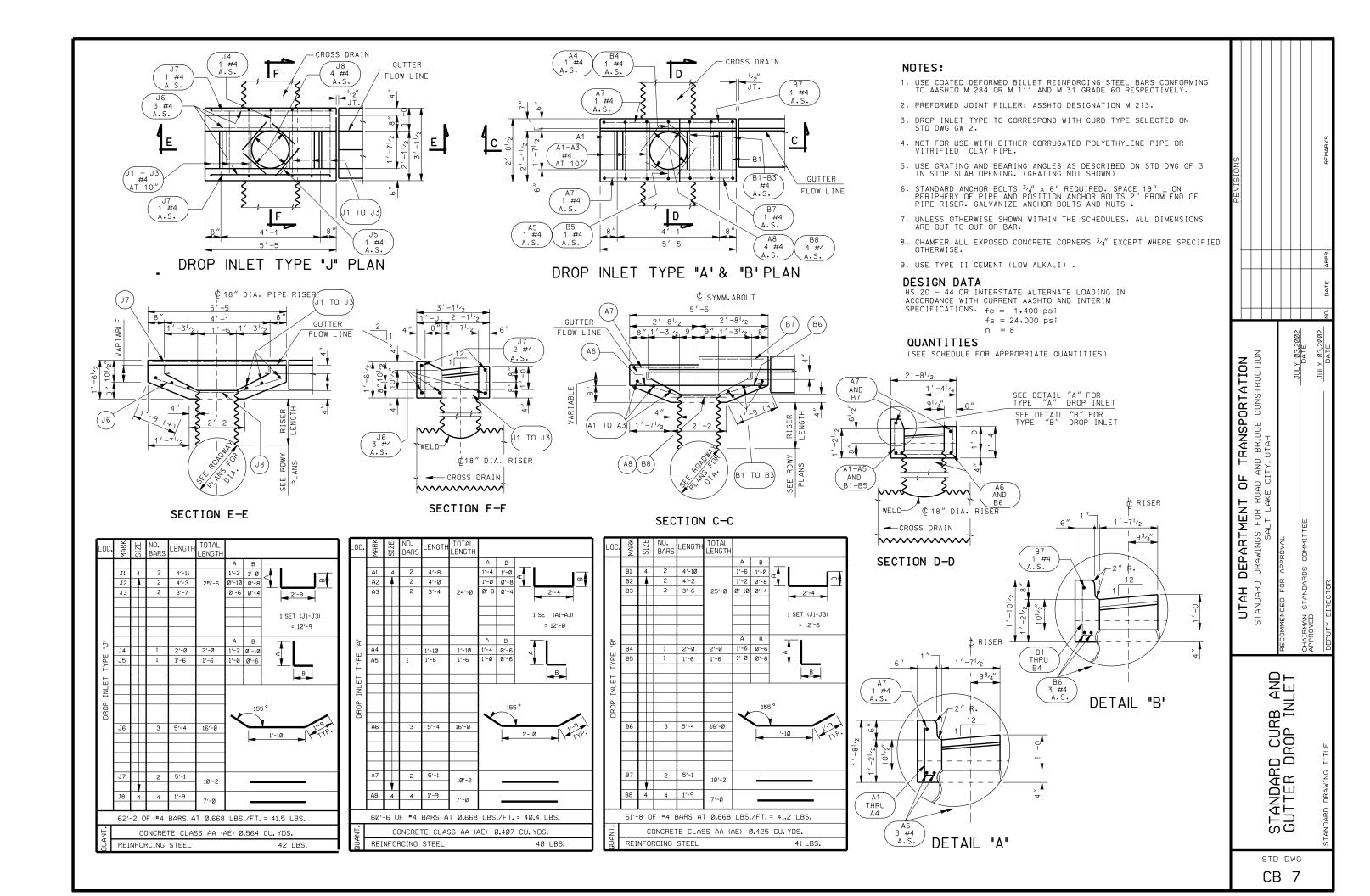
																	TA	ABL	E	#8																			
											MA	X. PIP	E SIZ	ES:	60" [DIA. R	CP 0	R 72	2" DIA	A. CMP	1					D =	7",T =	6" , T	2 = 1	0"							QUAN	TITIES	
8			IMENS	SIONS																RI	EINF	ORCI	ING	STEE	L											STAN	DARD	W/A ⁻ AP	TT'CH RON
LINE	Н	К	W ₁	м1	W ₂	M 2	A LENGTH	1 1 NO	A2 LENGTH	NO LE	B1 NGTH	NO LEN	B2 STH NO) LENG	B3 TH NC	LENG	C1 TH NO	LENG'	C2 TH NO	LENGTH	D1 H NO	D2 LENGTH	NO	D3 LENGTH I	NO LENGT	D4 H N0	D5 LENGTH	NO LEI	D6 NGTH N	O LENGT	D7 ГН NO	LENGTH	8 - NO	G _ENGTH N	RE ST		CONC. CU.YD.		CONC.
1	7′-6	6′-6	6′-Ø	2′-4	6′-Ø	4'-41/2	6′-8	24	2′-5	2 E	′-8	.6 4'-	6 6	3′-1	9 6	6′-8	3 4	6′-8	3 4	7′-7	7	7′-6	2	7′-5	2 7'-4	1 2	7′-3	2 7'	-2 2	2 7′-1	. 7		/	3'-4			5.334	9Ø9	8.707
2	8′-Ø	7′-Ø	A	A	A	A	│	26	A	A	A :	.8		A		A	A	A	A	8′-1	A	8′-Ø	A	7′-11	↓ 7′-1	Ø 🛦	7′-9	Å 7′	-8	7'-7	7 🛕	\perp	$I \perp$	A 1			5,575	950	8,948
3	8′-6	7′-6	1	<u> </u>		Y	<u> </u>	26		*	†	.8		1		1		*		8′-7		8′-6		8′-5	8′	4 Y	8′-3	8	-2	8′-1	. ▼			*	_		5.816	967	9.189
4	9′-0	8′-Ø	6′-Ø	2'-4	6′-Ø	4'-41/2	6′-8	28	2'-5	2 6	i'-8	20 4'	-6 6	3'-	Ø 6	6′-	8 4	6′-8	3 4	9'-1	7	9'-0	2	8′-11	2 8'-1	Ø 2	8′-9	2 8	-8 2	2 8'-7	7 7	/		3'-4	7 6	598	6.056	1008	9.429

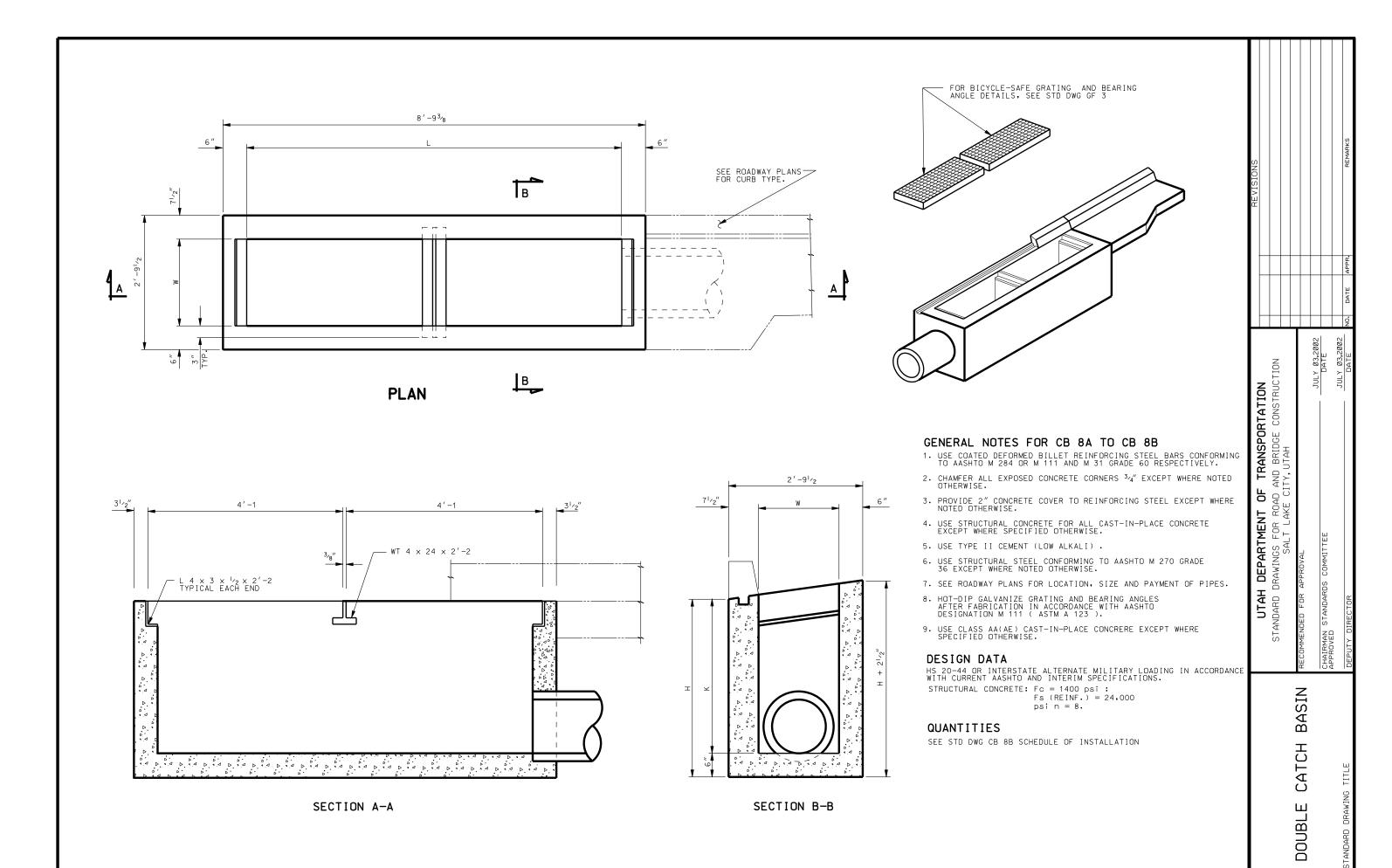
																TΔ	BLE	#9															
											MAX	. PIPE	SIZE	S:66"	DIA	A. RCP 0	R 78" [OIA. CMF)				D =	7½" Tj =	= 6" T ₂ = 1	10"					QUA	NTITIES	
ON			IMENS	SIONS														F	REINF	FORCIN	IG S	STEEL								S ⁻	ANDARD		TT'CH RON
LINE	Н	К	w ₁	м1	W ₂	M 2	A1 LENGTH	NO L	A2 ENGTH I	NO LE	B1 NGTH N	0 LEN	B2 STH NO	B3 LENGTH	NO I	C1 LENGTH NO	C2 LENGTH	NO LENG	D1 TH NO	D2 LENGTH N	IO LE	D3 ENGTH NO	D4 LENGTH NO	D5 LENGTH NO	D6 D LENGTH NO	LENGTH NO	D LENGTH)8 H NO	G LENGTH	REIN STE LB	CONC CU.YD		CONC.
1	8-Ø	7′-Ø	6′-6	2'-10	6′-6	4′-10½	7′-2	26	2'-11	2 7	-2 1	3 5′-	Ø 7	3′-Ø	6	7′-2 4	7′-2	4 8'-2	8	8'-1 2	2 8	3'-Ø 2	7′-11 2	7′-10 2	7′-9 2	7′-8 2	7'-7	8	3'-4	5 710	6.198	1061	9.779
2	8′-6	7′-6	6′-6	2′-1Ø	6′-6	4′-10½	7′-2	26	2′-11	2 7	-2 1	3 5′-	Ø 7	3′-Ø	6	7′-2 4	7′-2	4 8'-8	8	8'-7 2		8'-6 2	8'-5 2	8'-4 2	8'-3 2	8'-2 2	8′-1	8	3'-4	7 73			10.038
3	9'-0	8′-Ø	6′-6	2'-10	6′-6	4'-10½	7′-2	28	2'-11	2 7	-2 2	Ø 5'-	Ø 7	3′-Ø	6	7′-2 4	7′-2	4 9'-2	8	9'-1 2	2 9	9'-0 2	8'-11 2	8'-10 2	8'-9 2	8'-8 2	8′-7	8	3'-4	7 77	4 6.716	1125	10.297

REVISIONS								DATE NO. DATE APPR. REMARKS
	CIAH DEPAKIMENI OF IKANSPOKIAIION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL	JULY 03.2002	STANDARDS COMMITTEE	APPROVED	DEPUTY DIRECTOR DATE
			SIANDAKD CAICH BASIN		DROP INLET TYPE "D"	TABI FS	- חטר טררט	STANDARD DRAWING TITLE

STD DWG

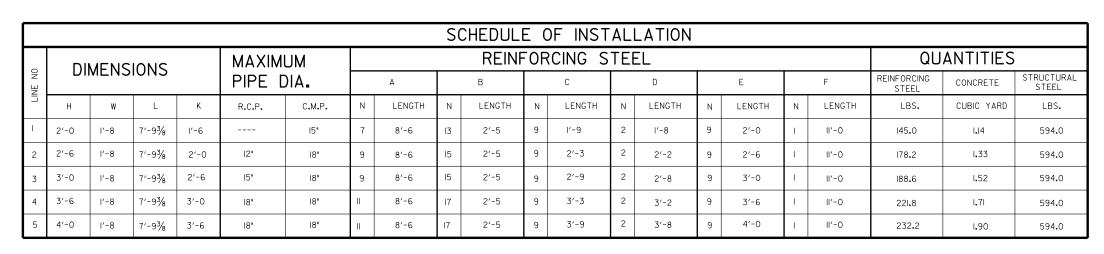
CB 6H

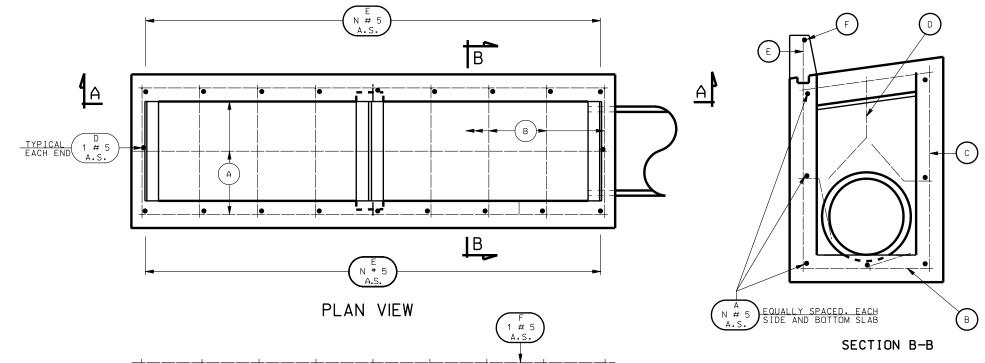




STD DWG

CB 8A





EQUALLY SPACED. EACH N # 5

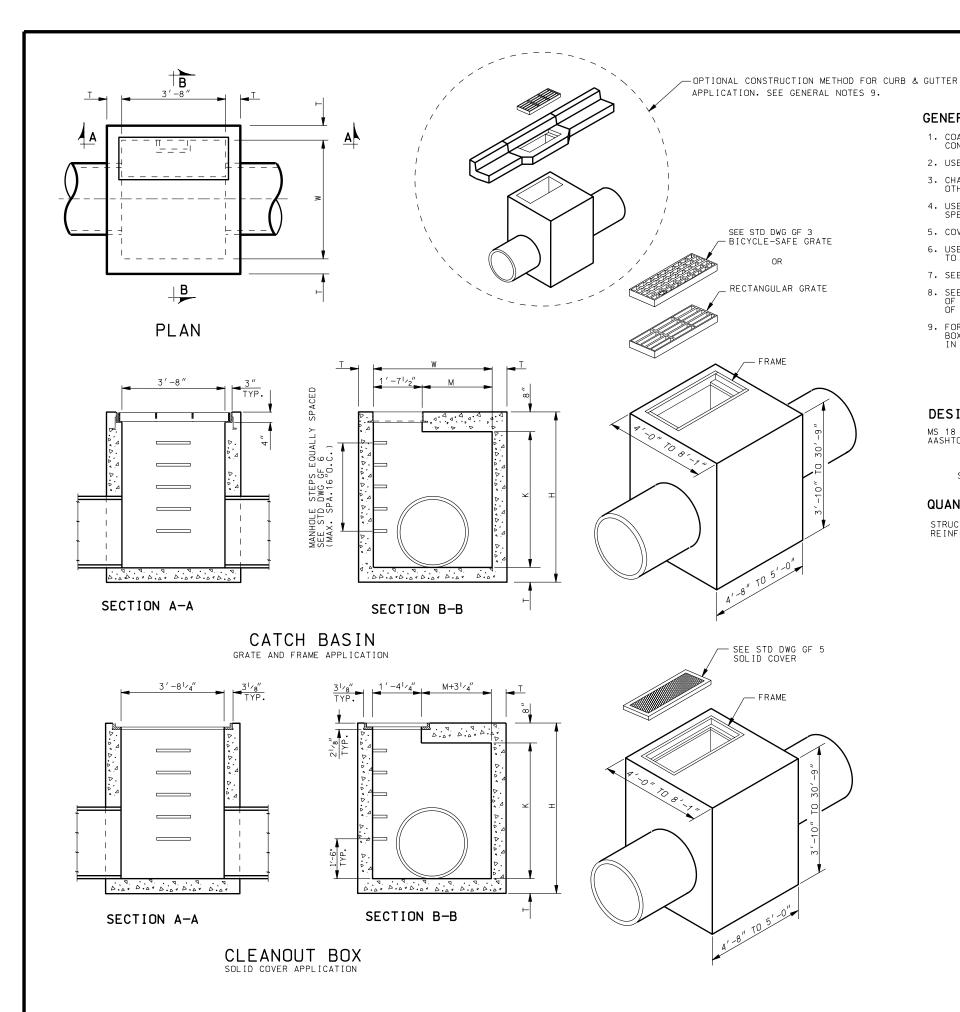
SECTION A-A

	TABLE	"A"	
F	R.C.P.	(C.M.P.
DIA.	CU. YDS.	DIA.	CU. YDS.
12"	0.023	12"	0.015
15"	0.031	15"	0.023
18"	0.041	18"	0.033

NOTES:

- 1. INCLUDE CONCRETE QUANTITIES FOR CURB AND GUTTER IN ROADWAY QUANTITIES.
- 2. DEDUCT CONCRETE DISPLACED BY PIPE(S), TABLE "A", FROM CONCRETE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION.
- 3. CUT AND BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPE(S) AND MAINTAIN 2" CLEARANCE.

CHOTOTOTO	NEVISIONS							NO. DATE APPR.	
	UTAH DEPARTMENT OF TRANSPORTATION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL	7 IUL Y 83.2882	CHAIRMAN STANDARDS COMMITTEE	DEPUTY DIRECTOR DATE N	
			s. CE	ΓD	O TOUGHT CHICH BHOIN	 √G 3 [STANDARD DRAWING TITLE	



GENERAL NOTES FOR CB 9A TO CB 9D

- 1. COAT ALL REINFORCING STEEL, DEFORMED BILLET-STEEL BARS CONFORMING TO AASHTO DESIGNATION M 31M, GRADE 60.
- 2. USE TYPE II CEMENT (LOW ALKALI) UNLESS SPECIFIED OTHERWISE.
- 3. CHAMFER 3/4" ALL EXPOSED CONCRETE CORNERS EXCEPT WHERE NOTED OTHERWISE.
- 4. USE CONCRETE CLASS AA(AE) FOR ALL CAST-IN-PLACE CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.
- 5. COVER TO REINFORCING 2 inches: EXCEPT WHERE NOTED OTHERWISE.
- 6. USE STRUCTURAL CARBON STEEL FOR STRUCTURAL STEEL GRATING CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36 (ASTM A 709, GRADE 36)
- 7. SEE STD DWG GF 3 AND GF 5 FOR GRATING, FRAME AND SOLID COVER DETAILS.
- 8. SEE ROADWAY PLANS FOR DETAILS OF INSTALLATION, INCLUDING LOCATION OF UNITS, NUMBER OF UNITS REQUIRED, TYPE OF UNITS, SIZE AND LOCATION OF PIPE(S).
- 9. FOR CURB & GUTTER APPLICATIONS ADJUST FINISH GRADE ELEVATION OF BOX AS REQUIRED. INCLUDE CONCRETE QUANTITIES FOR CURB & GUTTER IN ROADWAY QUANTITIES.

DESIGN DATA

MS 18 ($\mbox{HS-20}$) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

CAST-IN-PLACE STRUCTURAL CONCRETE: fc = 1,400 psi, n = 8 REINF. STEEL: fc = 24,000 psi STRUCTURAL STEEL: fs = 20,000 psi

QUANTITIES

STRUCTURAL CONCRETE SEE SCHEDULE OF INSTALLATION REINFORCING STEEL

INDEX OF SHEETS

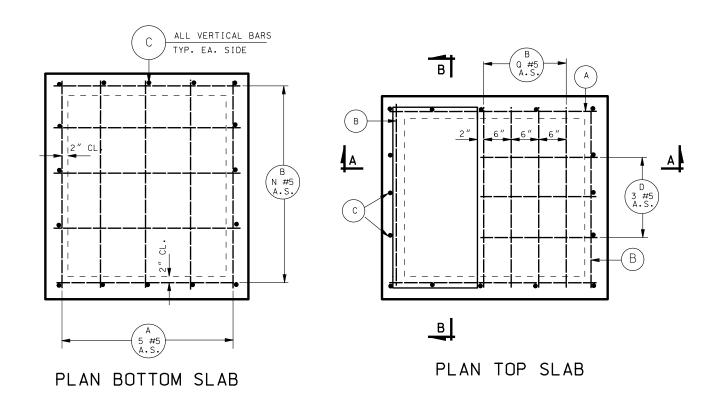
- A- SITUATION & LAYOUT
- B- SECTION DETAILS
- C- SCHEDULE OF INSTALLATION FOR 18"-42" RCP. 12"-48" CMP.
- D- SCHEDULE OF INSTALLATION FOR 48"-66" RCP. 60"-78" CMP.

TRANSPORTATION
AND BRIDGE CONSTRUCTION
IY, UTAH PF DEPARTMENT UTAH H BASIN BOX AYOUT TANDARD CATCH AND CLEANOUT BITUATUON & LAY

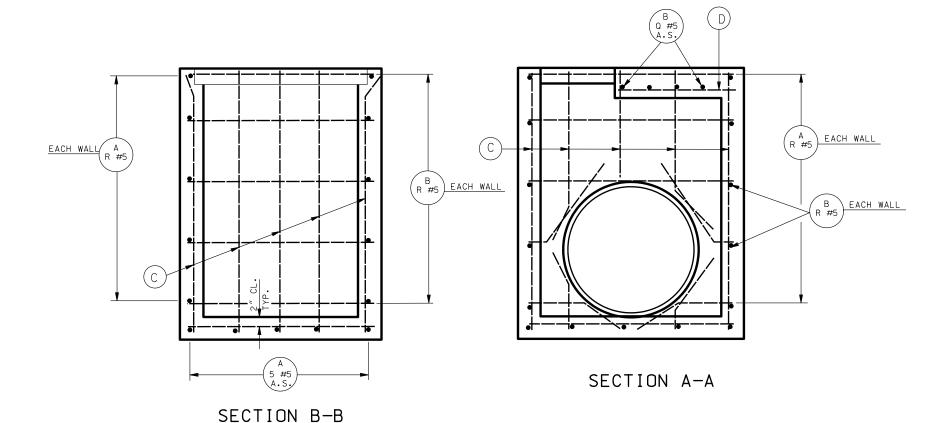
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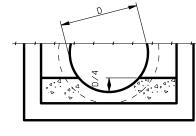
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STD DWG CB 9A



- 1. FORM THE BOTTOM SLAB OF THE BOX TO FIT THE INVERT OF THE PIPE(S) WHEN SO REQUIRED ACCORDING TO THE DETAIL SHOWN ON THIS SHEET. SEE TABLE 3 ON STD DWG 9C AND CB 9D FOR ADDITIONAL CONCRETE QUANTITIES.
- 2. DEDUCT CONCRETE DISPLACED BY PIPE(S) FROM THOSE CONCRETE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION TABLE 1 ON STD DWG CB 9C AND CB 9D.
- 3. WHEN FORMED INVERT IS REQUIRED, SEE TABLE 3 ON STD DWG CB 3 AND CB 4 FOR ADDITIONAL CONCRETE QUANTITIES.
- 4. FIELD CUT AND BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPE(S) AND MAINTAIN 2 INCHES MINIMUM CLEARANCE.
- 5. UNLESS OTHERWISE SHOWN, ALL DIMENSIONS ARE OUT TO OUT OF BARS.
- 6. WEIGHT QUANTITIES FOR GRATE AND FRAME AND SOLID COVER AND ARE SHOWN FOR INFORMATION ONLY.
- 7. SEE STD DWG CB 9 FOR DIMENSIONS.
- 8. PIPE DIAMETERS SHOWN IN TABLES AND SCHEDULE ARE INSIDE DIAMETERS.
- 9. MAXIMUM PIPE DIMENSIONS SHOWN IN SCHEDULE IN INSTALLATION ARE FOR PIPES PERPENDICULAR TO WALLS OF BOX, DETERMINE CLEARANCES FOR SKEWED PIPES.
- 10. SEE STD DWG GF 6 FOR MANHOLE STEP DETAILS.
- 11. ALL REINFORCING BARS TO BE #5 BARS @ 12" UNLESS OTHERWISE SHOWN.
- 12. WHEN SOLID COVER IS REQUIRED ADD 0.023 CU.YDS. CONCRETE TO THOSE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION AND 3" TO EACH D-BAR, AND 1.0 LB. TO REINFORCING STEEL QUANTITIES.





FORMED INVERT

UTAH D STANDARD D	STANDARD CATCH BASIN AND CLEANDIT BOX RECOMMENDED FOR A	ILS I	CHAIKMAN STANDAKD APPROVED
	STANDARD (<u> </u>	
	STD	DWG	

CB 9B

F TRANSPORTATION
) AND BRIDGE CONSTRUCTION
CITY, UTAH

DEPARTMENT OF ID DRAWINGS FOR ROAD AI SALT LAKE CIT

P

lu l	JLE SIEPS				COL	_UM	N	"A'	,					(COL	UM	N	″B '	' /						(COL	.UN	ΛN	"C"	,					(COL	_UN	ΛN	"D"	,			
LINE	MAN MAN		IMENSIO	NS		REINFO	DRCING	STEEL		DUANT		DIN	MENSIONS	3		REINFO	RCING	STEEL			JANTIT		DIM	ENSION			REIN	FORCIN	G STEEL		DUANT		DII	MENSION	IS		REIN	FORCING				TITIES -	j
	F	к Н	K	Т	A LENGTH	NO LEN	В	NO.=16		CONC.	REINF. STEEL lbs	н	К	ד	A LENGTH	NO LEN	В по	NO.=16		3	្ទ	EINF. TEEL lbs	Н	K	т	A LENGTH	NO L	B	NO.=18	D NO.=3 LENGTH	CONC.	REINF. STEEL lbs	Н	K	Τ	A LENGTH		B ENGTH I	C NO.=18		CONC.	REINF. STEEL 1bs	
1		4 3'- 4 4'		8 6	3′-8	13 4	1'-4	16 3'-		1.41			3′-3		 4'-2	 13 4	 '-4 1	 7 4'-	 Ø 2'	 0 1	70																						1
3	2	5 4'-		8		15	\pm	16 3'-1 18 4'-		1.55 1.69			3′-9	ı	4 - 2	15 4	1	9 4'-	_		73 88	2Ø6 232	5′-Ø	3′-1Ø	6"	4′-8	15	4'-4	21 4'-7	7 2'-E	2.08	262											3
4	3	5 5′- 6 5′-				15	Н.	18 4'-1 20 5'-	11	1.83	225 250		4'-3 4'-9	\square	-H	15 17	1	.9 5'- 21 5'-			2.03 2.19	241 266	5′-6 6′-Ø	4'-4 4'-10	-	-H	15	-H	21 5'-: 23 5'-7	1	2.24	271	5′-7 6′-:	7 4'-5 1 4'-11	6"	5′-2	15	4'-4	22 5′-2 24 5′-8	2 3'-	2.45 2.63	5 287 2 316	4
6	4	6 6'	-4 5′-:	2		17		20 5'-1 20 5'-1	11	2.12	259	6′-5	5′-3			17	2	21 6′-	·Ø		2.19	275	6′-6	5′-4			17	\pm	23 6'-:	1	2.57	3Ø9	6′-7	7 5′-5	5		17		24 6′-2	2	2.79	9 325	6
7	4	7 6'- 7 7'			\vdash	19 19		22 6'- 22 6'-1	5	2.26	284 292		5′-9 6′-3	\square		19 19	2	:3 6'-			.49 .64	3Ø3 31Ø	7′-Ø 7′-6	5′-1Ø 6′-4		-	19	+	25 6'-7 25 7'-:	7	2.73 2.89	337 346	7'-7		1		19 19	+	26 6'-8 26 7'-2	3	2.96 3.13	6 354 3 364	7
9	5	8 7'-				21		24 7'-		2.54			6'-9			21	2	5 7'-			.79	336	8′-Ø	6′-1Ø			21		27 7'-7	7	3.05	374			í		21		28 7′-8		3.30		9
10	6	8 8′- 9 8′-	-4 7' LØ 7'-		\vdash	21		24 7'-1 26 8'-		2.69			7′-3 7′-9	$\vdash\vdash\vdash$	+	21 23	2	.5 8'- .7 8'-			.94 3.09	344 37Ø	8′-6 9′-0	7′-4 7′-1Ø	+	+	21	++	27 8'-: 29 8'-7	1	3.21 3.37	383	8'-7 9'-:	7 7'-5 1 7'-11	5	$\vdash\vdash$	21		28 8′-2	2	3.4°	7 4Ø2 4 432	10
12	7	9 91	-4 8′-	2		23		26 8′-1		2.97	359	9′-5	8′-3			23	2	.7 9′-	Ø		3.24	378	9′-6	8'-4			23		29 9'-:		3,53	421	9'-7				23		30 8′-8 30 9′-2	2	3.8	1 441	12
13	7 1	Ø 9'- Ø 1Ø'	10 8'- -4 9'-		\vdash	25 25		28 9'- 28 9'-1		3.11 3.25	384 392	9′-11 10′-5	8′-9 9′-3	H	+	23 25 25 27	2	9 9′- 9 10′-			3.39 3.54	4Ø5 413	10'-0 10'-6	8′-1Ø 9′-4		+	25 25	+	31 9'-7 31 10'-1	7	3.69 3.85	449 459	10'-1 10'-7	1 8'-11 7 9'-5	1	$\vdash\vdash$	25 25	+	32 9′-8 32 10′-2	3	3.98 4.19		13
15	8 1	1 10'-	lØ 9'-	8		27		30 10′-	5	3.40	417	10′-11	9'-9				3	31 10′-	6	3	.70	439	11′-Ø	9′-10			27		33 10'-7	7	4.01	487	11'-	1 9'-11	í		27		34 10′-8	3	4.3	2 509	15
16 17	9 1	11 11'- 2 11'-			-	27 29	-	30 10′-1 32 11′-		3.54 3.68		11'-5 11'-11	10'-3 10'-9	H - H	\vdash	27 29	3	31 11'- 33 11'-			.85 .00	447 473	11'-6 12'-0			+	27		33 11'-: 35 11'-7	1 /	4.18 4.34	496 524			5	\vdash	27 29		34 11'-2 36 11'-8	2 /	4.4		16 17
18	10 1	2 12'	-4 11'-		3′-8	29 4	1'-4	32 11'-1	11 1'-6	3.82	459	12′-6	11'-3	6"	4'-2	29 4	′-4 3	3 12′-	Ø 2'	-Ø 4	4.15	481	12′-6	11'-4	6"	4′-8	29	4'-4	35 12'-	1 2'-E	4.50	534	12'-7	7 11′-5	6"	5′-2	29	4'-4	36 12′-2	2 3'-	4. 83	3 557	18
19	10 1	3 12′- 3 13′			3′-10	31 4	1′-6	34 12'- 34 13'-		7 4.72 4.89			11'-9 12'-3	7"	4'-4	31 4	′-6 3	5 12'- 5 13'			5.12 5.30	521 529	13'-1 13'-7	11'-10 12'-4	7"	4′-10	31	4'-6	37 12′-8 37 13′-2	2'-7	5.52 5.71	576 585		2 11'-11 3 12'-5	7"	5′-4	31	4′-6	38 12′-° 38 13′-3	3′-	1 5.92 6.12	2 600 2 609 2	19 20
21	11 1	4 13′-	11 12'-			33		36 13′-	6	5.06	531	14'-0	12'-9			33	3	7 13′-		5	.48	556	14'-1	12′-10			33		39 13'-8	3	5.90	613	14'-2	2 12′-11	í		33		40 13′-	3	6.3	2 639	21
22	12 1	4 14′- 5 14′-	5 13'- 11 13'-	2		33	11	36 14′- 38 14′-	0	5.23 5.40	53° 565	14'-6 15'-0	13′-3 13′-9	$\sqcup \sqcup$	+H	33 35	3	7 14′ 9 14′-	-1		.66 .84	564 591	14′-7 15′-1	13′-4 13′-10	+	+	33	+	39 14'-2 41 14'-8	2	6.09 6.28	622 651	14'-8 15'-2	3 13′-5 2 13′-11	5	\vdash	33		40 14′-3 42 14′-9	3	6.53	2 648 2 2 678 2	22
24	13 1	_		2		35		38 15′-	Ø	5.57	574	15′-6			- / 1	35	3	9 15'			.02	599	15′-7	14'-4			35		41 15′-2	2	6.47	662			5		35		42 15′-3	3	6.90		24
25	13 1 14 1		11 14'- -5 15'-	8		37 37	H	4Ø 15′- 4Ø 16′-	6	5 . 74	599 608		14'-9 15'-3	Н		37 37	4	41 15′- 41 16′	-7		.20 .38	626 634	16'-1 16'-7	14′-1Ø 15′-4	+	+	37	+	43 15'-8 43 16'-2	3	6.66 6.85	691 700		2 14'-11 3 15'-5	1	\vdash	37 37		44 15′-° 44 16′-°	9	7 . 13	3 718 2 3 727 2	<u>25</u>
27	14 1	7 16′-	11 15'-			39		42 16′-	6	6.08	633	17′-Ø	15′-9			39	4	3 16′-	-7	6	.56	661	17′-1	15′-1Ø			39		45 16′-8		7.04	729	17′-2	2 15′-11	1		39		46 16′-	9	7.50	3 757 2	<u>-0</u> 27
28	15 1	7 17′ 8 17′-		2	\vdash	39 41	-	42 17'- 44 17'-	0	6.25 6.42	642		16'-3 16'-9	H		39 41	4	3 17' 5 17'-	-1		.74 .92	669 696	17′-7 18′-1	16'-4 16'-10	+	\perp	39		45 17'-2 47 17'-8		7.24 7.43	738 767		3 16′-5 2 16′-11	5		39 41		46 17′-3 48 17′-9	3	7.7		<u>28</u>
30	16 1	8 18′	5 17′-	2		41		44 18′-	ø	6.59	676	18′-6	17′-3			41	4	5 18′	-1	7	7.10	704	18′-7	17′-4			41		47 18'-2	2	7.62	776	18′-8	3 17′-5	5		41		48 18′-3	3	8.1	4 806 3	30
31	16 1 17 1	9 18′- 9 19′		8		43 43		46 18′- 46 19′-	6	6.76 6.92				HH	+	43 43	4		-7		.28 .46	731 740	19′-1 19′-7	17′-1Ø 18′-4	+		43 43	+	49 18′-8 49 19′-2		7.81 8.00	8Ø5 815		2 17′-11 3 18′-5		\vdash	43 43	+	50 18′-9 50 19′-3	3	8.3 8.5	4 836 3 845 3	31
33	17 2	Ø 19′-	11 18'-	8		45		48 19′-	6	7.09	736	20'-0	18′-9	Ш		45 45	4	.9 19′-	7	7	.64	766	20'-1	18′-10			45		51 19′-8	3	8.19	844	20'-2	2 18′-11	í		45		52 19′-9	9	8.75	5 875 3	33
34 35	18 2 18 2	Ø 20′ 21 20′-			\vdash	45 47	-1:	48 20'- 50 20'-		7 . 26	744	20'-6 21'-0	19′-3 19′-9	H		45 47	4	·9 20′ 51 20′-	-1		.82 3.10	775 8Ø1	20'-7 21'-1	19′-4 19′-10		+	45 47	\vdash	51 20'-2 53 20'-8	2	8.38 8.57	853 882	20'-8 21'-2	3 19′-5 2 19′-11	5	\vdash	45 45 47	\vdash	52 20'-3 54 20'-9	3	8.99 9.19	5 884 3 5 914 3	34 35
36	19 2	21′	5 20'-	2	Ш	47		50 21′-	Ø	7.60	778	21′-6	20'-3			47	5	51 21′	-1	8	3.18	810	21′-7	20'-4			47		53 21′-2	2	8.76	891	21′-8	3 20'-5			47		54 21′-3	3	9.39	5 923 3	36
37 38	19 2 20 2		11 20'- -5 21'-		3′-10	49 49	1'-6	52 21'- 52 22'-		7.77 7 7.94		22'-0	20'-9 21'-3	7"		49 49 4	/-6 5				3.36 3.54	837 345	22'-1 22'-7	20′-10 21′-4	7"	4′-10	49 49	4′-6	55 21'-8 55 22'-2	3 2 2'-7	8.95 9.15	920 929		2 20'-11 3 21'-5	1 7	5′-4	49	4'-6	56 21'-'	3 3 3'-	9.59 1 9.76		37 38
39	20 2	3 23′	Ø 21'-	8 8	4'-0			54 22′-	7 1′-8	9.47	858	23′-1	21'-9	8"	4'-6	51 4		5 22′-	8 2	-2 10	ð . 17	892	23′-2	21'-10	8"	5′-0			57 22′-9		10.86	979	23′-3	3 21'-11	1 8			4′-8	58 22′-10	7 3'-	2 11.5	7 1013 3	39
4Ø 41	21 2 21 2	3 23′· 4 24′·		2	++	51 53	+1	54 23′- 56 23′-	7	9.67 9.87		23'-7 24'-1		$ \cdot \cdot $	+H	51 53	5	5 23'- 7 23'-			1.38 1.59		23'-8 24'-2		+	+	51 53	+	57 23′-3 59 23′-9	3	11.09	988 1Ø18		9 22'-5 3 22'-1:		\vdash	51 53		58 23′-4 60 23′-10	4	11.80 12.0		1 0 41
42	22 2	4 24'	-6 23′-	2		53		56 24′-	-1	10.07	901	24′-7	23′-3		$\perp \! \! \perp \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$	53 53 55 55	5	7 24′-	-2	10	.80	936	24′-8	23′-4	Ш	\Box	53		59 24′-3	3	11.53	1027	24′-9	23′-5			53	/ 1	60 24'-	4	12.2	7 1063 4	42
43 44	22 2 23 2	5 25′ 5 25′	-Ø 23'- -6 24'-	8		55 55		58 24′- 58 25′-	7	10.26	927 936	25′-1 25′-7	23'-9 24'-3	H	+	55 55	5	i9 24′- i9 25′-			1.01 .22	963 972	25′-2 25′-8	23′-1Ø 24′-4	+	+	55 55	+	61 24'-9 61 25'-3	3 /	11.75 11.97	1Ø57 1Ø66		3 23′-11 3 24′-5		$\vdash\vdash$	55 55		62 24′-10 62 25′-	4	12.5 12.7	1 1Ø93 4 4 11Ø3 4	13 44
45	23 2	6 26	0 24'-	8		57		6Ø 25′-	7	10.66	962	26'-1	24'-9			57	6	31 25′-	-8	11	.43	1000	26′-2	24′-1Ø			57		63 25′-9	9	12.20	1096	26′-3	3 24'-11	i		57		64 25′-16 64 26′-	a	12.98	8 1133 4	45
46 47	24 2 24 2		-6 25'-: -Ø 25'-	2 8	\vdash	57 59		60 26'- 62 26'-	7	10.86	976 997	26'-7 27'-1	25′-3 25′-9	H		57 59	6				.64 .85	1008 1035	26'-8 27'-2	25′-4 25′-10	+	+	57 59	++	63 26′-3 65 26′-9	3	12.42 12.64	1105				\vdash	57 59	++	64 26'-4 66 26'-10	4	13.2 13.4	1 1143 4 5 1173 4	<u>16</u> 47
48	25 2	7 27′	-6 26′-			59	1	62 27′-	-1	11.25	1005	27′-7	26′-3	Ш	1 1	59	6	3 27′-	-2	12	.06	1043	27′-8	26′-4			59		65 27′-3	3	12.86	1144	27′-9	26′-5			59		66 27'-	4	13.68	8 1183 4	48
	25 2 26 2		Ø 26'-	8 2	\vdash	61 61	+	64 27′- 64 28′-	7	11.45 11.65		28'-1 28'-7	26'-9 27'-3	HH	+	61	6	5 27'- 5 28'-			.27 .48	1071 1079	28'-2 28'-8	26′-1Ø 27′-4	+	+	61 61	+	67 27′-9 67 28′-3	3	13,08	1174 1183	28′-3	3 26′-11 3 27′-5	1	\vdash	61 61	+	68 27′-10 68 28′-	4	13.93	2 1213 ² 5 1223 5	19 50
51	26 2	9 29′	Ø 27'-			63	#	66 28′-		11.84	1066	29'-1	27′-9			63	6	7 28′-	-8	12	.69	1107	29′-2	27′-1Ø			63		69 28′-9	9	13.53	1212	29′-3	3 27′-13	i		63		70 28′-10		14.3	9 1253	51
	27 2 27 3		-6 28'- Ø 28'-		\vdash	63 65	-	66 29′- 68 29′-		12 . Ø4		29′-7 30′-1	28′-3 28′-9	H - I	+	63 63 65		7 29'- 9 29'-			3.11	1115 1142	29′-8 30′-2	28′-4 28′-1Ø	\vdash	+	63 65	\vdash	69 29′-3 71 29′-9	3 /	13.75 13.97	1222 1251	29′-9 30′-3	28'-5 3 28'-1		\vdash	63 65	\vdash	70 29′-4 72 29′-10		14.63	2 1263 5 6 1293 5	<u>52</u> 53
	27 3 28 3				4'-0			68 3Ø′-						8"	4′-6			9 30′-			3.11	1151	3Ø′-8	29′-4	8"	5′-0		4′-8	71 30′-3	3 2′-8		1251		29′-5	5 8"	5′-6			72 30'-				54
H	+			+			+							$\vdash \vdash$		+	+	+	+	-	-						\vdash	\dashv		1				1			\vdash	\dashv		1		+	-
		W=3	-Ø. M=1	′-4½	•			_	_	•	N=5. Ω=3	W=3'-	6. M=1′-	10½				_			N=	5 . 🛚 = 4	W=4'-0	0. M=2′·	41/2				-	•		N=6, Ω=5	W=4'-	6. M=2	-10½				•	•		N=6. Q=6	

TABLE 1 : CONCRETE DISPLACED BY PIPES

 PIPE
 SIZES
 T = 6' yd³
 T = 7" yd³
 T = 8' yd³

 RCP
 CMP
 yd³
 yd³
 yd³

 12'
 Ø.015
 Ø.017
 Ø.019

 18'
 Ø.033
 Ø.038
 Ø.044

 18'
 24'
 Ø.058
 Ø.068
 Ø.078

 24'
 30'
 Ø.091
 Ø.106
 Ø.121

 30'
 36'
 Ø.131
 Ø.153
 Ø.174

 36'
 42'
 Ø.178
 Ø.208
 Ø.237

 42'
 48'
 Ø.233
 Ø.271
 Ø.310

TABLE 2 : MAXIMUM PIPE SIZE TO BE USED

	RCP	CMP
COL. A	18"	12", 18", 24"
COL.B	30"	30", 36"
COL.C	36"	42"
COL.D	42"	48"

TABLE 3 : CONCRETE NEEDED FOR FORMED INVERT. (SEE SHEET 2)

PIPE SIZES	12"	18"	24"	30"	36"	42"	48"
RCP (yd³)		Ø . 191	0.222	Ø.286	Ø.378	Ø.483	
CMP (yd3)	0.081	0.106	0.120	0.124	Ø . 169	0.220	0.277

STRUCTURAL STEEL :

RECTANGULAR GRATE & FRAME = 340 lbs BICYCLE-SAFE GRATE & FRAME = 365 lbs SOLID COVER & FRAME = 474 lbs

JULY 03,2002 DATE UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
MENDED FOR APPROVAL CHAIRMAN S APPROVED STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 18" TO 42" RCP S STD DWG CB 9C

E STEPS					СО	LU	MN	,	"E "									CC	LL	JMN	1 ′	'F '	′								CO	LU	IMN	"	G″							СО	LU	MN	"	Н″				
LINE	+	DIME	NSIONS	6		REI	NFORC	ING	STEEL			DUANT	ITIES	_	DIME	NSION	S		RE	INFOF	CING :	STEEL			ΩUAN	TITIES	5_	DIM	ENSION	S		RE	INFORCI	ING ST	TEEL		QUANT	ITIES	DI	MENSIO	NS		REI	NFORCI	NG ST	EEL		DUANT	TITIES	-INE
4	R	Н	K	Т	LENGTH	_	E LENGTH		C NO.=2 LENGTH	ØN	D 10.=3 NGTH	CONC.	REIN STEE lbs	EL	Н	Κ	Т	LENGT)	LENG ⁻	В	C NO.=2	20 NC	D 0.=3 NGTH	CONC.	STE		Н	К	Т	A LENGTH		B		_	D NO.=3 LENGTH	CONC.	REINF STEEL lbs	Н	K	Т	LENGT		B		C NO.=22 LENGTH	D NO.=3 LENGTH	CONC,	REIN STEE lbs	EL
1 4	_	6′-4 6′-1Ø	5′-2 5′-8	6"	5′-1	1 17	4'-4	4 20	6 5′-1	11 (3'-9	3.00	3	358	 6′-1Ø	 5′-8		6′-						 4′-3	3.3		 4Ø5																							:
3 5		7'-4	6′-2 6′-8	I	H	19	Ī	28	8 6′-1	11	\mathcal{I}	3,37 3,55	4	00	7′-4 "′-1Ø			1	19		20		-11	1	3.5°	9	416 *	7′-4 7′-10		6"	6′-11	. 19	4'-4	31	6'-11 7'-5	4′-9	3.80	45	1	 -1 6'-1		 " 7'-	 5 21	4'-4	34	 7′-8	 5′-3	4.33	50	3
5 6		8′-4 3′-1Ø	7′-2 7′-8			21		30	Ø 7′-1	11	/1	3.74 3.92	4	42	8′-4 8′-1Ø	7′-2 7′-8		\Box	23		3	7'- 1 7'-	-11	/1	3.9°	7 .	459	8'-4 8'-1Ø	7'-2 7'-8	H		21		33 35	7'-11 8'-5	1	4.20	49	7 8′-	7 7′-	5	1	21	4	34	8'-2 8'-8	1	4.54 4.75	- 52	20 5
7 7	9	9'-4 9'-10	8'-2 8'-8			23		33	2 8′-1	11		4.10	4	84	9′-4 9′-1Ø	8′-2			23		30	8'-	-11	\square	4.3	3 !	502	9'-4 9'-10	8'-2 8'-8			23		35 37	8'-11 9'-5		4.61 4.81	544 579	1 9'-	7 8′-	5		23 25		36 38	9'-2 9'-8		4.96 5.18		S7 7
9 8 10 8	10 1	0'-4	9′-2 9′-8			25 27		34	4 9′-1	11		4.47 4.65	5	27 1	0′-4 0′-10	9′-2 9′-8		\vdash	25	5	35	9′-	-11		4.7	4 !		10′-4	9'-2 9'-8			25 27		37 39	9'-11 10'-5		5.01 5.21	590 625	0 10'-		5		25 27		38 4Ø	10'-2 10'-8		5.39 5.60	61	15 °
11 9	11 12 1	_	10'-2 10'-8			27	1		6 10/-1			4.84 5.02	5	69 1	12'-4 1'-10	10'-2 10'-8		1	27		37		-11		5.1 5.3	3 !	589	11'-4 11'-11	10'-2 10'-8		1	27		39 41		1	5.42 5.62		3 11'-	7 10'-	5	1	27		40	11'-2 11'-8	/	5.81 6.02	. 66	
13 1Ø 14 1Ø		2'-4	11'-2 11'-8	6" 7"	5′-1 6′-	1 29	4'-4 4'-6	4 38	8 11'-1		3′-9 3′-1Ø	5.20 6.36		611 1	2'-4	11'-2 11'-8	6" 7"	6'-	5 2°		_	3 11'-	-11	4′-3 4′-4	5.5 6.7	1	632	12′-5 12′-11	11'-2 11'-8	6" 7"	6′-11 7′-1	29	4'-4	41	11'-11	4'-9 4'-10	5.82 7.09	680	3 12'-	7 11'-		" 7'-! " 7'-	5 29	4'-4	42	12'-2 12'-9	5′-3 5′-4	6.23 7.58	71	10 13
15 11 16 11		-	12'-2 12'-8	Á	Ĭ	31	1	40	Ø 13'-	Ø	1	6.58 6.80	6	68 1	3′-5 3′-11	12′-2	A	Ĭ	33		4	1 13′	-0	1	6.90 7.18	6 (690	13′-5	12'-2 12'-8	Á	1	31		43	13′-Ø	1	7.33 7.57		13′-8	8 12'-	5 4	1	31	4	44	13'-3 13'-9	1	7.83 8.Ø8	3 77	72 15 79 16
	_		13′-2 13′-8			33 35		42	2 14'-	_	+	7 . Ø2		711 1	4′-5 4′-11			H	33	5	40			+	7.4 7.6	1	734	14′-5	13'-2 13'-8			33 35		45 47	14′-0		7,81 8,05	792 82	2 14'-8	3 13′-	5		33 35		46 48	14'-3 14'-9		8.33 8.58	82	21 17
19 13 20 13		_	14′-2 14′-8			35 37		44		_	+	7.45 7.67			5′-5 5′-11	14′-2 14′-8		H	35 37	,	45			H	7.8°		_		14'-2 14'-8			35 37		47 49			8.29 8.53			_	5		35 37		48 5Ø	15′-3 15′-9		8.83 9.Ø8		59 19 05 20
21 14 22 14	16 1 17 1		15′-2 15′-8			37 39		48		_	+	7 . 89			6′-5 6′-11	15′-2 15′-8		H	37 39		47			Н	8.33 8.50			16′-5 16′-11	15′-2 15′-8			37 39		49 51			8.77 9.01	886 92		8 15'- 2 15'-1	5		37 39		5Ø 52	16'-3 16'-9		9 . 33	91	
23 15 24 15	17 1 18 1		16′-2 16′-8			39 41		48 50	8 17′-	_		8,32 8,54	8	39 1	7′-5 7′-11				3°		4° 5		_		8.78 9.0	3 8	866	17′-5 17′-11				39 41		51 53	17′-0		9.24 9.48	933	3 17′-8	_	5		39 41		52 54	17′-3 17′-9		9.83 10.08	96	
25 16 26 16	_		17′-2 17′-8			41 43		50 50	Ø 18'- 2 18'-	-		8.76 8.98			8′-5 3′-11	17′-2 17′-8			43	3	5 50				9 . 2		_	18′-5 18′-11	17′-2 17′-8			41 43		53 55	18'-Ø 18'-6		9.72 9.96				5		41 43		54 56	18'-3 18'-9		10.33 10.58	101 105	
28 17		_	18′-2 18′-8			43 45		5.		6		9 . 19			9′-5 9′-11	18′-2 18′-8			43 45	5	50 58	19′	-		9 . 61			19′-5 19′-11	18'-2 18'-8			43 45		55 57			10.20 10.44			_			43 45		56 58	19′-3 19′-9		10.83 11.08	100	
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33 2Ø 34 2Ø	23 2	?3′-Ø	21'-2 21'-8	7" 8"	6'-	_	4'-6 4'-8	3 60	8 22'- Ø 22'-	7 3	3′-1Ø 3′-11	10.50 12.44	11	lØ8 2	3′-Ø	21'-2 21'-8	_		7 4° 9 5:	4'	-8 6	1 22'	-7 .	4′-4 4′-5	11.0°	3 :	1141	23′-Ø	21'-2 21'-8	7" 8"	7'-1 7'-3	. 49 51	4′-8	63	22′-7	4'-1Ø 4'-11	11.64 13.75	1226	3 22'-8 3 23'-3	3 21'-1	11 8	" 7'- " 7'-	9 51	4′-8	64	22′-1Ø	5′-4 5′-5	12 . 33	120	54 3 4
36 21	24 2	4'-0 3	22′-2 22′-8	1		51 53	1		2 23′-	7	1	12 . 69	1		4′-0	22′-8			53 53		63	3 23′	-7	1	13 . 3	3 1		24′-Ø	22'-2 22'-8			51 53		63 65	23′-7	1	14.03	127	7 23'-' 1 24'-:	3 22′-1	11		51 53		66	23′-4 23′-1Ø		14.85 15.14	127	13 36
38 22	25 2	5′-0	23′-2 23′-8			53 55			4 24'-	7	\pm	13 . 19	11	195 2	4′-6 5′-0	23′-8			53 55		60 65		-7	\pm	13.8°	3 1	230 2	25′-Ø	23'-2 23'-8			53 55		65 67	24′-7		14.58 14.86	132	5 24'-9 1 25'-3	3 23′-1	11		53 55		68	24'-4 24'-10		15.43 15.72	132	52 38
40 23	26 2	6′-Ø 3	24′-2 24′-8			55 57			6 25′-	7		13.70 13.95	12	39 2	5′-6 6′-Ø	24′-8			55 57		65		-7		14.4	9 13	275 2	26′-Ø				55 57			25′-7		15 . 14		3 26'-:	9 24'- 3 24'-1	11		55 57			25′-4 25′-1Ø		16.01 16.30		11 40
	27 2	7′-0 3	25′-2 25′-8			57 59			8 26′-	7		14.21	12	82 2		25′-8			57 59		67	26′	-7		14.9! 15.2	2 1:	320 2		25′-8			57 59			26′-7		15.70 15.97	141	1 26'-' 7 27'-:	3 25′-1	11		57 59		72	26'-4 26'-10		16.59 16.88	146	SØ 42
44 25		8′-0	26′-2 26′-8			59 61			Ø 27'-	7		14.71	13	326 2		26′-8			5°		6°	1 27′	-7		15.48 15.79	5 1:	364 2	28′-Ø	26'-2 26'-8			59 61			27′-7		16.25 16.53	1465	5 28′-:	9 26'- 3 26'-1			59 61		74	27′-4 27′-1Ø		17.17 17.46	147	7 9 44
46 26	29 2	9'-Ø :	27′-2 27′-8			61 63		70	Ø 28'- 2 28'- 2 29'-	7		15.22 15.47				27′-2 27′-8 28′-2			63		7	1 28′ 3 28′	-7		16.0	1 1: 3 1:			27'-2 27'-8 28'-2			61 63		73 75	28'-1 28'-7 29'-1		16.81 17.08	1476	6 28′-1 3 29′-1 1 29′-1				61 63		74 76	28'-4 28'-10 29'-4 29'-10		17.75 18.Ø4	152	20 45 58 46 69 47
47 27 48 27	30 3	ø′-ø l:	28′-8	l♥	•	63 63 65	*	17.	4 29′-	7 🔰	2/ 44	15.73 15.98	14	413 3	Ø′-Ø	28′-8	۱¥	V	63 63 65	•	75 75 -8 75	28′ 3 29′ 5 29′	-1 /	4, =	16.5 16.8	1 1-	454	3Ø′-Ø	28′-8	l♥	*	63 63 65	11	77	29'-7	Ý	17.36 17.64	156	1 30′-:	3 28′-1	1 ♥	V	63 63 65	4	78 78	29'-4 29'-10 30'-4	F	18.33 18.62	160	07 48
49 28	30 3	10'-6 C	29'-2	8"	6'-(81 65	4′-8	2 /·	4 30′-	-11 3	3′-11	16.23	14	24 3	M6	29′-2	8.	6′-	4 65	4′	-8 /t	30′	-1	4′-5	17.0	3 1·	4/8	310'-6 	29′-2	8"	/′-3	65	4′-8	5 //	30′-1	4'-11	17.92	1572	2 30'-	7 29'-	8 10	/′-	9 65	4′-8	/8	3W'-4	5′-5	18.91	161	18 4°
	#	\dashv						F		+				+							+		#	\dashv		+	\dashv					Ħ		\parallel									+							丰
\dashv	#	#				H				Ŧ				+					+		+		+	1		+	#					F		H																#
	W	=5′-3,	M=3'-	-7½								N:	7. Q=	7	W=5′-	9, M=4	4′-1 ¹ / ₂									N=7-	0=8 v	V=6′-3	B, M=4′	-7½								N=8. Q=	3 W=6'-	-9. M=F	5′-1½							l N	l=8 , D=1	10

NOTE: LINES MARKED WITH * REFER TO METAL PIPE ONLY.

TABLE 1 : CONCRETE DISPLACED BY PIPES

PIPE	SIZES		T= 7"_	T= 8"
RCP	CMP	yd ³	yd ³	yd ³
48"	6Ø"	Ø . 34Ø	Ø.396	Ø.453
54"	66"	Ø . 427	Ø . 498	Ø . 569
6Ø"	72"	Ø . 524	Ø.611	Ø . 698
66"	78"	0.630	Ø.735	0.840

TABLE 2 : MAXIMUM PIPE SIZE TO BE USED

	RCP	CMP
COL.E	48"	6Ø"
COL.F	54"	66"
COL.G	60"	72"
COL. H	66"	78"

TABLE 3 : CONCRETE NEEDED FOR FORMED INVERT. (SEE SHEET 2)

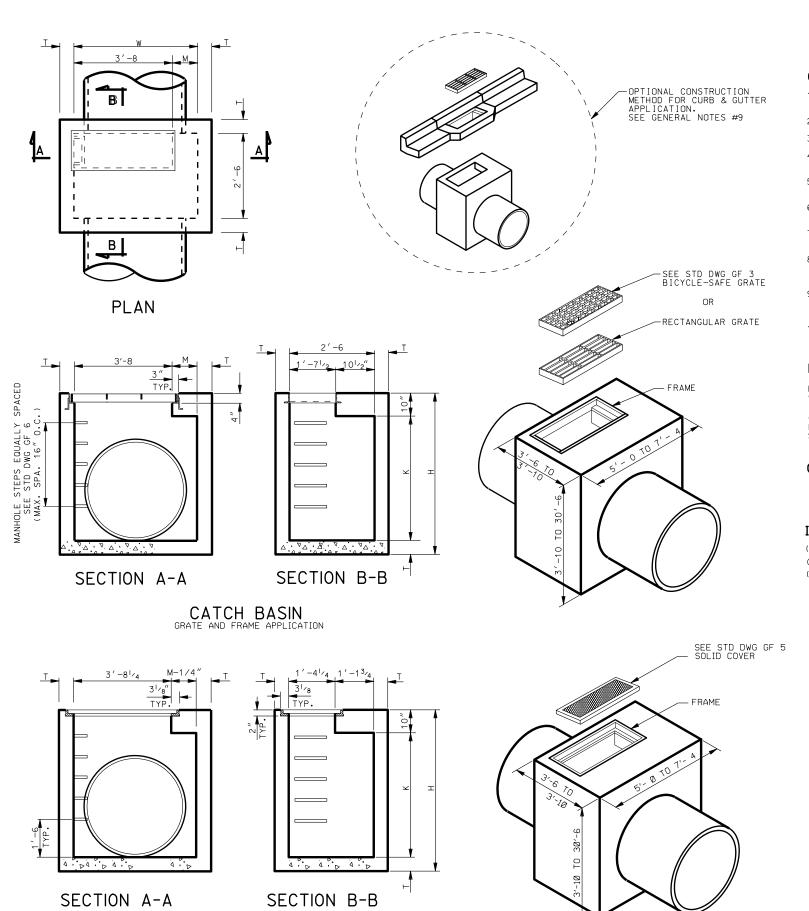
PIPE SIZES	48"	54"	6Ø"	66"	72"	78"	
RCP (yd³)	Ø . 676	Ø.814	Ø . 964	1.126			
CMP (ya³)			Ø . 37Ø	Ø . 443	Ø . 522	0.609	

STRUCTURAL STEEL : RECTANGULAR GRATE & FRAME = 340 lbs BICYCLE-SAFE GRATE & FRAME SOLID COVER & FRAME = 365 lbs = 474 lbs UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 48" TO 66"RCP 60" TO 78"CMP

STD DWG

JULY 03,2002 DATE

CB 9D



CLEANOUT BOX SOLID COVER APPLICATION

GENERAL NOTES FOR CB 10A TO CB 10C

- 1. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
- 2. USE TYPE II CEMENT (LOW ALKALI) UNLESS SPECIFIED OTHERWISE.
- 3. CHAMFER ALL EXPOSED CORNER3/4" EXCEPT WHERE NOTED OTHERWISE.
- 4. USE CONCRETE CLASS AA(AE) FOR ALL CAST-IN-PLACE CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.
- 5. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.
- 6. USE STRUCTURAL STEEL CONFORMING TO AASHTO M 270 GRADE 36 EXCEPT WHERE NOTED OTHERWISE.
- 7. SEE STD DWG GF 3 AND GF 5 FOR GRATING, FRAME AND SOLID COVER DETAILS.
- 8. SEE ROADWAY PLANS FOR DETAILS OF INSTALLATION, INCLUDING LOCATION OF UNITS NUMBER OF UNITS REQUIRED, TYPE OF UNITS, SIZE AND LOCATION OF PIPE(S).
- 9. FOR CURB & GUTTER APPLICATIONS ADJAST FINISH GRADE ELEVATION OF BOX AS REQUIRED. INCLUDE CONCRETE QUANTITIES FOR CURB & GUTTER IN ROADWAY QUANTITIES.

10.USE CLASS AA(AE) CAST-IN-PLACE CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.

DESIGN DATA

 $\mbox{HS-20-44}$ OR INTERSTATE ALTERNATE MILITARY LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

CAST-IN-PLACE STRUCTURAL CONCRETE: Fc = 1,400 psi n = 8 REINF. STEEL: Fs = 24,000 psi STRUCTURAL STEEL: Fs = 20,000 psi

QUANTITIES

STRUCTURAL CONCRETE — SEE SCHEDULE OF INSTALLATION REINFORCING STEEL

INDEX OF SHEETS

(CB 10A) 1- SITUATION & LAYOUT

(CB 10B) 2- SECTION DETAILS

(CB 10C) 3- SCHEDULE OF INSTALLATION

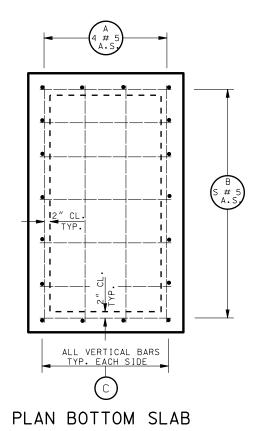
FOR 42"-60" RCP. 48"-72" CMP.

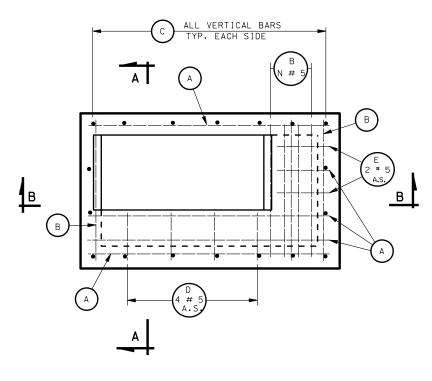
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt Lake City, Utah CH BASIN JT BOX LAYOUT

STANDARD CATCH BASI AND CLEANOUT BOX SITUATION & LAYOUT

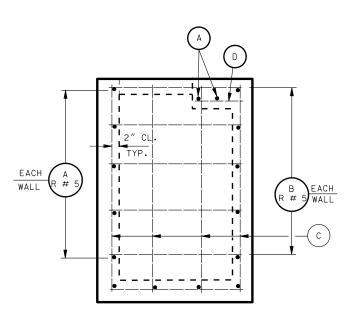
STD DWG

CB 1ØA

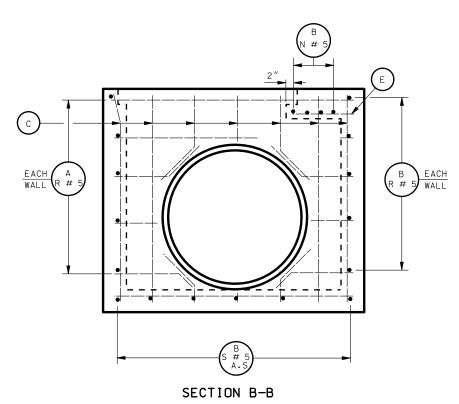




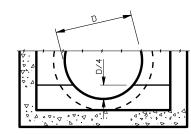
PLAN TOP SLAB







- 1. QUANTITIES SHOWN IN THE SCHEDULE OF INSTALLATION ARE FOR ONE UNIT ONLY.
- 2. FORM THE BOTTOM SLAB OF THE BOX TO FIT THE INVERT OF THE PIPE(S) WHEN SO REQUIRED ACCORDING TO THE DETAIL SHOWN ON THIS SHEET. SEE TABLE 3 ON STD DWG CB 10C FOR ADDITIONAL CONCRETE QUANTITIES.
- 3. DEDUCT CONCRETE DISPLACED BY PIPE(S) FROM THOSE CONCRETE QUANTITIES GIVEN IN SCHEDULE OF TABLE 1 ON STD DWG CB 10C.
- 4. WHEN FORMED INVERT IS REQUIRED. SEE TABLE 3 ON STD DWG CB 10C FOR ADDITIONAL CONCRETE QUANTITIES.
- 5. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.
- 6. UNLESS OTHERWISE SHOWN, ALL DIMENSIONS ARE OUT TO OUT OF BARS.
- 7. WEIGHT QUANTITIES FOR GRATE AND FRAME, AND SOLID COVER AND FRAME ARE SHOWN FOR INFORMATION ONLY.
- 8. SEE STD DWG CB 10A FOR DIMENSIONS.
- 9. PIPE DIAMETERS SHOWN IN TABLES AND SCHEDULE ARE INSIDE DIAMETERS.
- 10. MAXIMUM PIPE DIMENSIONS SHOWN IN SCHEDULE OF INSTALLATION ARE FOR PIPES PERPENDICULAR TO WALLS OF BOX. DETERMINE CLEARANCES FOR SKEWED PIPES.
- 11. SEE STD DWG GF 6 FOR MANHOLE STEP DETAILS.
- 12. USE #5 BARS FOR ALL REINFORCING @ 12" UNLESS OTHERWISE SHOWN.
- 13. WHEN SOLID COVER IS REQUIRED, ADD .023 CU.YDS. OF CONCRETE TO THOSE QUANTITIES GIVEN IN SCHEDULE OF INSTALLATION AND ADD 3" TO EACH D-BAR, AND 1.0 LB TO REINFORCING STEEL QUANTITIES.
- 14. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M 284, OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
- 15. CHAMFER ALL EXPOSED CONCRETE CORNERS 3/4" EXCEPT WHERE NOTED OTHERWISE.
- 16. USE CLASS AA(AE) CAST CONCRETE EXCEPT WHERE SPECIFIED OTHERWISE.



FORMED INVERT

	AND BRIDGE CONSTRUCTION	JITY, UTAH			JULY 03,2002	DATE DATE	S005.50 Y II.T.	DATE NO. DATE APPR.
NOT HINDLENHY IN INSINITY THIND	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE		DEPUTY DIRECTOR
		ARD CATCH BASIN	() () () () () () () () () () () () () (U CLEANUUI BUX	FUTTON DETAILS]		DRAWING TITLE

CB 1ØB

L.	OLE STEPS			COL	UMN	"A"						С	OL	UMN	"B"	ı							COL	_UMN	"C"							С	OLI	NML	"D"]
=	F MANH		DIMENSIONS	<u> </u>	INFORCING		_	QUANTIT		DIMEN	NSIONS			NFORCIN			, T =	QUANT CONC.	TIES REINF	DIME	NSIONS	-		EINFORCI	16		16	QUANTITO CONC.	TIES REINF.	DIMEN	SIONS			NFORCIN				TITMAUD I	TIES REINF.	إ
	NO. o	R	н к т	LENGTH N	B O LENGTH N		D NO.=4 LENGTH	CU.YD.	STEEL LBS.	Ι	K	T LENG	GTH NO	B LENGTH	NU.	E18 NO.:			STEEL LBS.	Н	K	T	A ENGTH N	B IO LENGTH	NU.	=18 NO.=4	1 NO.=2	J I	STEEL LBS.	н	κ ⁻	'	A STH NO	B LENGTH	NO.=2		E NO.=2 LENGTH	CONC.	STEEL -	i
	2 2 3 2 2 3 2 2 3 2 2	4 4 4 5 5 6 6 6 6 7 7 7 7 8 8 8 8 9 9 10 11 11 11 11 12 12 13 1 14 1 15 15 16 1 16 17 17 17	3'-10 2'-6 6' 4'-4 3'-0 4'-10 3'-6 5'-4 4'-0 5'-10 4'-6 6'-0 5'-6 7'-4 6'-0 7'-10 6'-6 8'-4 7'-0 8'-10 7'-6 9'-10 8'-6 10'-4 9'-0 9'-10 8'-6 11'-4 10'-0 11'-10 10'-6 12'-4 11'-0 5'-12'-4 11'-0 5'-13'-5 12'-0 14'-11 12'-6 15'-5 14'-0 15'-5 14'-0 15'-5 15'-6 1	4'-8 1. 11 11 12 12 12 12 12 12 12 12 12 12 12	4 3'-2 1 4 6 1 6 1 8 1 8 1 8 1 9 2 2 2 2 2 2 4 2 2 4 2 2 2 3 4 2 2 6 2 8 2 8 2 0 0 0 3'-2 3 2 3'-4 3 2 3 4 3 4 3 6 3 6 3 6 3 8 3 8 3 8 3 8 8	00 LENGTH 15 3'-5 16 3'-11 17 4'-5 17 4'-11 19 5'-5 19 5'-11 21 6'-5 21 6'-11 23 7'-5 23 7'-11 25 8'-5 27 9'-11 27 9'-5 27 9'-11 29 10'-5 27 9'-11 20 11'-11		1.365 1.504 1.642 1.781 1.920 2.059 2.198 2.337 2.476 2.615 2.754 2.892 3.031 3.170 3.309 3.448 3.587 3.726 4.610 4.775 4.941 5.107 5.272 5.438 5.604 5.769 6.100	179 187 212 220 245 253 278 286 311 319 344 352 377 385 410 418 443 451 489 498 523 531 552 565 590 590 624 632	6'-4 6'-10 7'-4 7'-10 8'-4 8'-10 9'-4 10'-10 11'-4 11'-10 11'-4 112'-4 12'-11 13'-5 13'-11 14'-5 14'-11 15'-5 15'-11 16'-5	5'-0 6'-6 6'-6 7'-0 7'-6 8'-0 9'-0 9'-6 10'-0 11'-0 11'-6 12'-0 12'-6 14'-0 14'-0 14'-6 15'-0 15'-6 16'-0	6, 2, 2		3′-2 22 24 44 45 56 56 58 58 58 58 58 58 58 58 58 58	NO LEN 23	IGTH LENG	TH LENG	THE CU. YD. THE CO. YD. THE CO	LBS 301 321 338 366 375 403 412 440 450 477 486 515 524 566 575 604 613 642 651 680 689 637 727		5'-6 6'-0 6'-6 7'-0 8'-6 9'-0 8'-6 10'-6 11'-0 11'-6 12'-0 12'-6 13'-6 14'-0 14'-6 15'-6 16'-0	6*	6'-2		NO LEN	GTH LENG:	TH LENGTH	2.763 2.930 3.263 3.263 3.430 3.596 3.763 3.763 4.096 4.263 4.430 4.594 5.644 5.644 5.644 6.238 6.436 6.433 6.433 7.228 7.228	LBS 343 353 382 391 420 429 458 467 496 506 536 544 587 596 626 635 665 674 704 713 743	7'-4 7'-10 8'-4 8'-10 9'-4 10'-4 11'-4 11'-10 11'-5 13'-11 13'-5 14'-11 15'-5 15'-11 16'-5 17'-5	 6'-Ø 6'-6 7'-Ø 7'-6 8'-6 8'-6 9'-Ø 10'-0	LENCE		3′-2 3′-4	NO LENGT	H LENGTH 1 1'-0' 5 1 1 5 1 1 1'-0' 6 1'-1 2 0 6 0 0 0 6 0 0 0 0 0		3.127 3.303 3.479 3.655 3.831 4.007 4.182 4.358 4.534 4.710 4.886 5.988 6.197 6.406 6.615 6.615 6.824 7.032 7.241 7.450 7.659 7.868	1 2 3 4 5 6 7 385 8 417 9 427 10 458 11 468 12 499 13 510 14 541 15 551 16 582 17 592 18 638 19 648 20 680 21 690 22 722 23 733 24 764 25 775 26 806 27 817 28	
	38	18 19 1 19 1 19 1 20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7.7-11 16'-6 18'-5 17'-0 18'-5 17'-0 19'-11 18'-6 19'-5 18'-0 19'-11 18'-6 19'-11 18'-6 19'-11 19'-6 10'-11 19'-6 12'-11 20'-6 12'-11 20'-6 12'-11 20'-6 12'-5 20'-0 12'-11 20'-6 12'-6 8' 12'-6 22'-6 12'-6 22'-6 12'-6 23'-0 12'-6 23'-6 12'-7 12'-	5.5 5.5 5.5 5.6 6.6 6.6 6.6	2 4 4 4 4 4 6 4 8 8 8 4 8 7 0 3'-4 5 2 3'-6 5 2 4 5 6 6 5 8 5 8 5 8 7 8 7 8 7 8 7 8 8 8 7 8 8 8 7 8 8 8 8	3 18'-Ø 18'-Ø 18'-Ø 18'-Ø 19'-Ø 19'-Ø'-Ø 19'-Ø 1		6.266 6.432 6.597 7.094 7.260 7.426 7.591 7.757 9.259 9.452 9.646 9.839 10.032 10.226 10.419 10.613 10.806 11.193 11.386 11.580 11.773 11.567 12.160	992 1018 1027 1053 1055 1087	18'-5 18'-11 19'-5 19'-11 20'-5 20'-11 21'-5 21'-11 22'-5 23'-0 23'-6 24'-0 25'-6 26'-0 26'-6 26'-6 27'-0 27'-6 28'-6 28'-6 39'-0 30'-0	26'-Ø 26'-6 27'-Ø 27'-6 28'-Ø 28'-6	7* 5'-1 8* 6'-	42444444444444444444444444444444444444	2 4 4 4 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	47 18 49 18 49 19 51 20 53 20 53 20 55 21 55 22 57 22 57 23 59 2 61 24 61 28 63 28 63 28 63 28 63 28 63 28 63 28 64 28 65 20 67 22 67 22 67 22 67 22 67 22	**-6 **-0 **-6 **-0 **-6 **-0 **-6 **-0 **-6 **-6 **-6 **-6 **-6 **-6 **-6 **-7 **	2 1'	3 10.533 10.752 10.970 11.188 11.406 11.629 11.842 12.060 12.278 12.496 12.714 12.933 13.151 13.369	113Ø 1159 1168 1197 12Ø7	18'-5 18'-11 19'-5 19'-11 20'-5 20'-11 21'-5 21'-11 22'-5 23'-0 23'-6 24'-0 25'-6 25'-6 26'-6 27'-0 28'-6 28'-0 28'-6 39'-0	22'-0 22'-6 23'-0 23'-6 24'-0 24'-6 25'-0 26'-6 26'-0 26'-6 27'-0 27'-6	8*	6'-4	42 44 44 46 48 48 50 50 3'-4 55 56 56 56 58 60 62 64 66 66 66 66 66 66	48 18 50 18 50 19 52 19 52 20 54 20 54 21 56 21 56 22 58 22 58 23 60 23 60 24 62 24 64 25	'-Ø '-6 '-0 '-6 '-0 '-6 '-0 '-6 '-0 '-7 '-7 '-7 '-7 '-7 '-7 '-7 '-7 '-7 '-7	-2 2'-2	7.822 8.020 8.215 8.416 8.615 8.812 9.011 9.209 9.407 11.171 11.401 11.632 12.093 12.323 12.554 12.784 13.015 13.245 13.766 13.766 13.766 13.798	791 821 830 869 869 908 937 946 998 1007 1037 1047 1077 1086 1117 1126 1156 1166 1196 1205 1235	18'-5 18'-11 19'-5 19'-11 19'-5 19'-11 120'-5 120'-11 120'-5 22'-5 22'-5 22'-6	17'-0 17'-6 18'-0 18'-6 19'-0 19'-6 19'-6 20'-6 21'-0 21'-6 22'-0 22'-6 23'-6 24'-6 24'-6 25'-0 26'-6 27'-0 28'-6	7' 6'-	_	3'-4 3'-6	50 17'- 50 18'- 50 18'- 52 18'- 52 19'- 54 19'- 56 20'- 56 21'- 58 22'- 60 22'- 60 22'- 60 24'- 64 25'- 66 25'- 66 26'- 70 27'- 70 27'- 71 28'- 72 28'- 74 39'-	Ø		8.076 8.285 8.494 8.703 8.912 9.120 9.329 9.538 9.747 9.965 11.808 12.051 12.294 12.536 12.779 13.022 13.265 13.508 13.750 13.993 14.236 14.479 14.479 14.792 14.964	848 29 859 30 890 31 901 32 932 33 948 34 975 35 985 36 1017 37 1027 38 1080 39 1091 40 11134 42 1166 43 1176 44 1208 45 1219 46 1251 47 1262 48 1294 49 1304 50 1337 51 1347 52 1380 53 1390 54	

TABLE 1 : CONCRETE DISPLACED BY PIPES:

 PIPE SIZES
 6'
 7'
 8'

 R.C.P.
 C.M.P.
 CU. YD.
 CU. YD.
 CU. YD.

 42'
 48'
 0.233
 0.271
 0.310

 48'
 60'
 0.340
 0.396
 0.453

 54'
 66'
 0.427
 0.498
 0.569

 60'
 72'
 0.524
 0.611
 0.698

 54'
 0.295
 0.344
 0.393

TABLE 2 : MAXIMUM PIPE SIZE TO BE USED:

		R.C.P.	C.M.F
COLUMN	Α	42"	48"
COLUMN	В	48"	60"
COLUMN	С	54"	66"
COLUMN	О	6Ø'	72"

TABLE 3 : CONCRETE NEEDED FOR FORMED INVERT:

PIPES SIZES	R.C.P. CU. YD.	C.M.P. CU. YD.
42"	Ø . 273	
48"	Ø . 428	Ø . 143
54"		
6Ø"	Ø.617	Ø.223
66"		0.270
72"		0.322

STRUCTURAL STEEL:

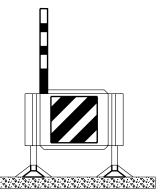
RECTANGULAR GRATE & FRAME = 340 LBS
BICYCLE - SAFE GRATE & FRAME = 365 LBS.
SOLID COVER & FRAME = 474 LBS.

JULY 03,2002 DATE UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
MENDED FOR APPROVAL CHAIRMAN STANDARDS APPROVED STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 42" TO 60" RCP AP TO 72" CMP STD DWG CB 1ØC

TYPE E

PLACE THE APPROPRIATE OBJECT MARKER PANEL OR SHEETING 2 INCHES FROM THE TOP OF THE LEAD BARREL OF THE ARRAY. MARKER POST NOT REQUIRED.

CRASH CUSHIONS TYPE A,B & D



OBJECT MARKER PLATE OR SHEETING: ATTACH TO THE TOP FRONT AND SIDE OF UNIT NEAREST THE APPROACH LANE OF TRAFFIC. IN A GORE AREA CENTER OBJECT MARKER.

* APPROVED SYSTEM TYPE D, REACT-350 HAS AN OBJECT MARKER SUPPLIED WITH THE SYSTEM, MARKER POST IS NOT REQUIRED.

2" | 17/16" HOLES

MARKER PLATE



USE A 0.032 GAUGE ALUMINUM MARKER PLATE WITH APPROPRIATE MARKER SHEETING

USE FOUR 1 INCH X $^{3}\mathrm{/_{8}}$ INCH ZINC PLATED BOLTS WITH WASHERS AND NUTS TO MOUNT PLATE.

SELF ADHESIVE SHEETING WITH APPROPRIATE OBJECT MARKER DESIGNATION CAN BE USED AS A SUBSTITUTE.

60"MIN.

MARKER POST

PLACE YELLOW BANDS OF REFLECTIVE SHEETING AS SPECIFIED BY STANDARD SPECIFICATION, SECTION 02891, PART 2 AT THE TOP OF THE POST WITH A 2 INCH SPACE BETWEEN THE 1ST AND 2ND BAND AND THE 2ND AND 3RD BAND, DRILL THREE MOUNTING HOLES, τ_{16} INCH IN DIAMETER, MEASURED FROM THE BOTTOM UP 5 INCHES, 12 INCHES AND 17 INCHES.

MARKER POST MOUNTING

MOUNT MARKER POST 48 INCHES FROM THE BOTTOM OF THE THIRD YELLOW BAND TO GROUND LEVEL. DO NOT COLLAPSE MARKER POST WHEN SECURING TO SYSTEM.

WOOD POST: PLACE MARKER POST ON THE FRONT OF THE FIRST POST OF SYSTEM AND SECURE WITH THREE $^{3}\!/_{8}$ X 4 INCH ZINC PLATED LAG BOLTS AND WASHERS.

METAL POST: PLACE MARKER POST ON THE FRONT OF THE FIRST POST OF SYSTEM AND SECURE WITH THREE $^{3}\!/_{8}$ X 3 INCH ZINC PLATED BOLTS WITH NUTS AND WASHERS.

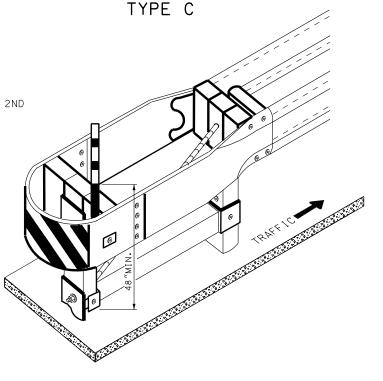
PLASTIC NOSE PIECES: PLACE MARKER POST 12 INCHES FORWARD FROM THE BACK EDGE OF THE NOSE PIECE AND SECURE WITH THREE $^3/_8$ X 3 INCH ZINC PLATED BOLTS WITH WASHERS.

NOTE: 1

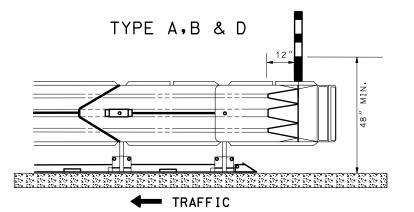
USE MARKER POST UNLESS OTHERWISE SPECIFIED. USE IS OPTIONAL WHEN SNOW ACCUMULATION IS NOT A CONCERN.

NOTE: 3

SHEETING TO COMPLY WITH UDOT STANDARD SPECIFICATION 02842 FOR FLEXIBLE SHEETING.



OBJECT MARKER PLATE OR SHEETING: ATTACH TO THE FRONT OF SYSTEM TOP, AND OFFSET 6 INCHES FROM CENTER TOWARD THE APPROACH LANE OF TRAFFIC.

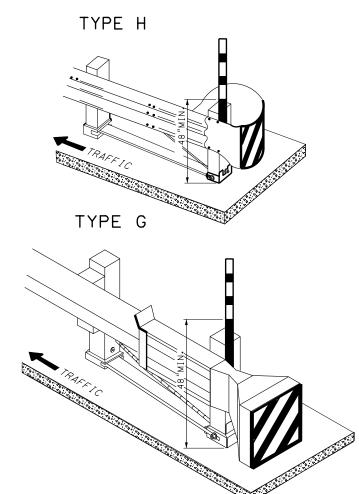


MARKER POST:

MOUNT ON THE SIDE OF THE APPROACH TRAFFIC. 12 INCHES FROM THE BACK EDGE OF PLASTIC NOSE PIECE. IN GORE AREAS MOUNT ON BOTH SIDES.

CRASH CUSHION TYPE F.

THIS SYSTEM HAS A BELTED OR PLASTIC NOSE PIECE AND STEEL POSTS.OBJECT MARKER MOUNTING SIMILAR TO TYPE H AND MARKER POST IS MOUNTED ON THE NOSE PIECE SIMILAR TO TYPE B.



F TRANSPORTATION
AND BRIDGE CONSTRUCT

P

UTAH

CRASH CUSHION MARKINGS

STD DWG

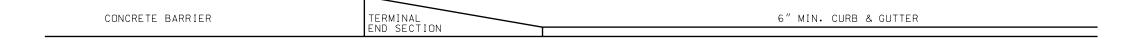
CC 1

DEPARTMENT O

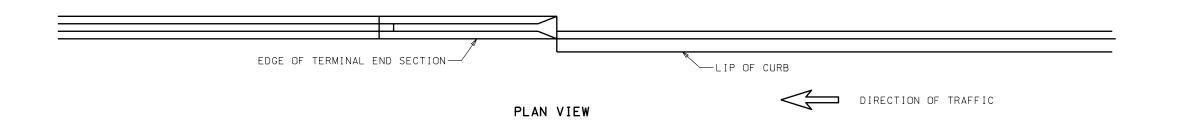
OBJECT MARKER PLATE OR SHEETING: PLACE THE APPROPRIATE OBJECT MARKER PANEL TO THE FRONT OF THE SYSTEMS.

MARKER POST

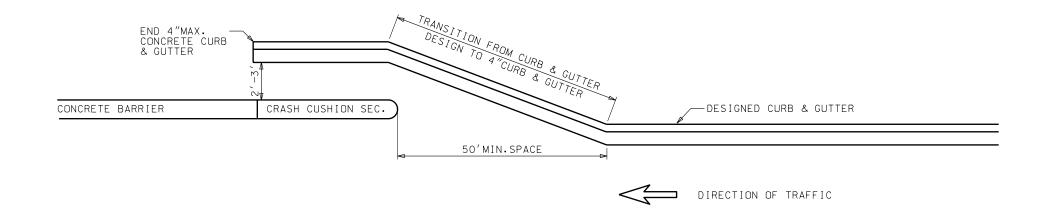




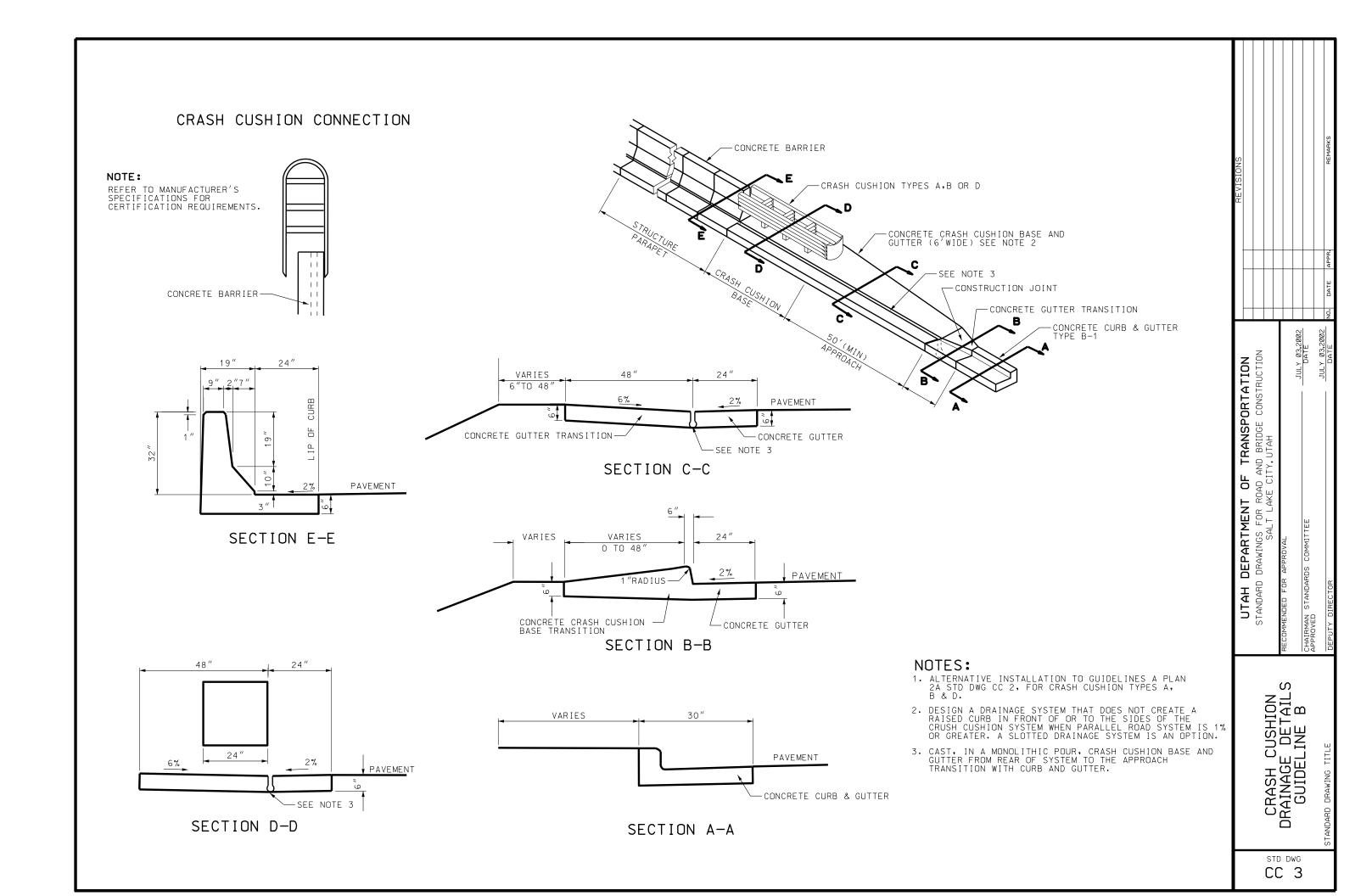
PROFILE VIEW



PLAN A2: SPEEDS OVER 40 MPH

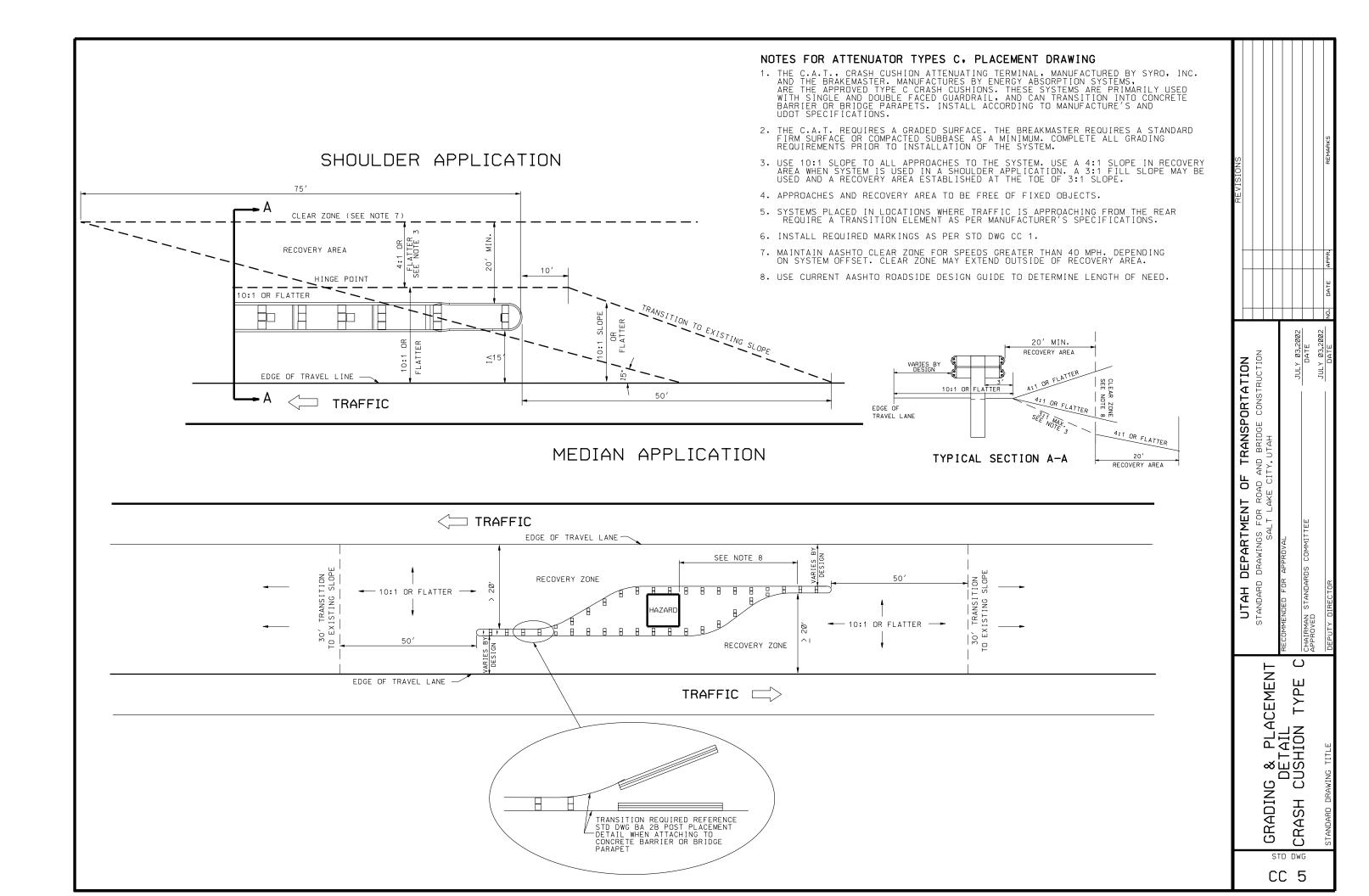


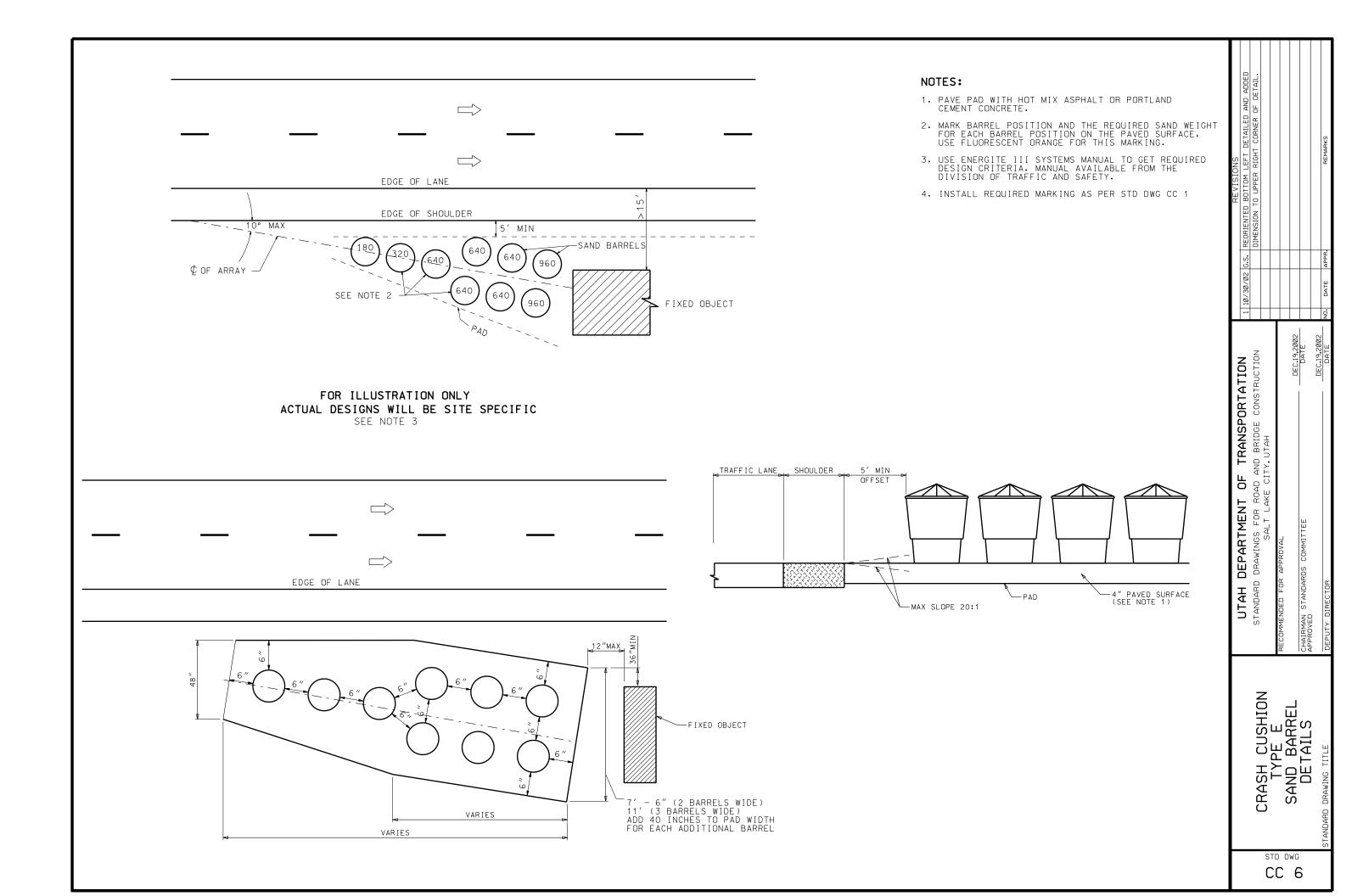
SPORTATION	DGE CONSTRUCTION			JULY 03,2002	DATE		JULY 03,2002	DATE NO. DATE APPR.	
UTAH DEPARTMENT OF TRANSPORTATION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE	APPROVED		DEPUTY DIRECTOR	
			JOHNINACE DELAILS	. M GOIDELINE A				STANDARD DRAWING TITLE	



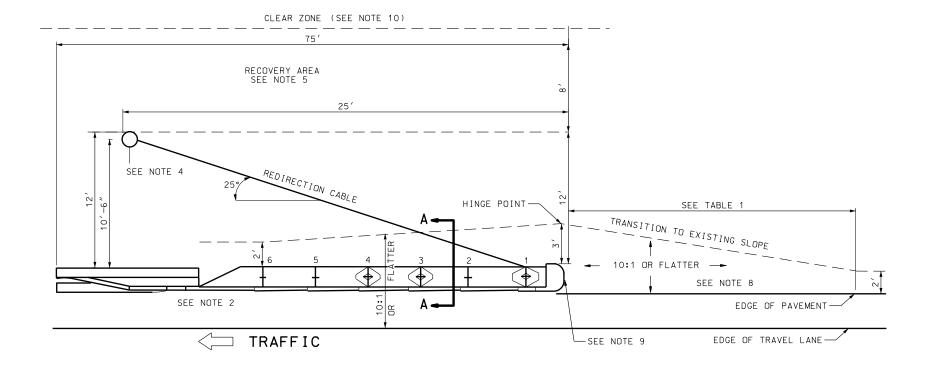
NOTES: SHOULDER APPLICATION CRASH CUSHION TYPE A: QUADGUARD, MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, TO PROTECT HAZARDS FROM 37 INCHES TO 90 INCHES. CRASH CUSHION TYPE B: QUADGUARD, MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, TO PROTECT HAZARDS UP TO 36 INCHES. A -CLEAR ZONE - SEE NOTE 7 CRASH CUSHION TYPE D: QUADGUARD ELITE AND QUADGUARD LMC, MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, AND REACT 350, MANUFACTURED BY ROADWAY SAFETY SERVICES. TYPE D SYSTEMS PROTECT HAZARDS UP TO 90 INCHES IN WIDTH, TYPE D SYSTEMS ARE USED WHERE ONE OR MORE NON-RECOVERABLE AREA - RECOVERY AREA TRANSITION TO EXISTING SLOPF IMPACTS PER YEAR ARE ANTICIPATED, OR WHEN REPAIR HISTORY INDICATES TWO OR MORE IMPACTS OVER A THREE YEAR PERIOD. EDGE OF PAVEMENT 2. ALL APPLICATIONS REQUIRE THE USE OF A 10:1 SLOPE OR FLATTER TO THE FRONT AND SIDE APPROACHES. USE A 10:2 OR FLATTER SLOPE AT THE REAR OF THE SYSTEM ≤15′ WHEN TRAFFIC ALSO APPROACHES FROM THE REAR OF A -EDGE OF TRAVEL LINE 3. USE A 4:1 OR FLATTER FILL SLOPE AND A RECOVERY AREA IF IMPRACTICAL, USE A MAXIMUM 3:1 FILL SLOPE AND A RECOVERY AREA ESTABLISHED AT THE TOE OF 3:1 FILL SLOPE. WHEN USED WITH A CUT SLOPE, A 4:1 OR FLATTER CUT IS REQUIRED IN THE RECOVERY AREA. TRAFFIC 4. USE A TRANSITION ELEMENT, AS PER MANUFACTURE'S SPECIFICATIONS, WHEN TRAFFIC APPROACHES THE REAR TRANSPORTATION AND BRIDGE CONSTRUCTION IY, UTAH 5. USE MANUFACTURE'S SPECIFICATIONS FOR PAD AND BACKUP 4:1 MAX. VARIES BY REQUIREMENTS. DESIGN 10:1 6. INSTALL PROPER MARKINGS AS PER STD DWG CC 1. - 10:1 -SLOPE TRANSITION EDGE OF TRAVEL LINE 3:1 (SEE NOTE 3) 7. MAINTAIN AASHTO CLEAR ZONE REQUIREMENTS. SEE NOTE 5 TYPICAL SECTION A - A 9F DEPARTMENT GORE APPLICATION AREA MEDIAN APPLICATION UTAH TRAFFIC TRAFFIC 50′ EDGE OF TRAVEL LANE VARIES BY DESIGN 10:1 OR FLATTER --TRAVEL 10:1 OR FLATTER 10:1 OR FLATTER 10:1 OR FLATTER 10N TO SLOPE SEE NOTE 2 SEE NOTE 2 HAZAR SEE NOTE 2 IL FOR SEMENT SUSHIONS A, B & D EDGE OF TRAVEL LANE -10:1 OR FLATTER SEE NOTE 2 -10:1 OR FLATTER ≤ 15' 10:1 OR FLATTER --SEE NOTE 3' DETAIL PLACEN CRASH CUS TYPE A, I ← 10:1 OR FLATTER ← 10:1 OR FLATTER ← TRAFFIC SEE NOTE 2 EDGE OF TRAVEL LANE TRAFFIC > STD DWG

CC 4





CRASH CUSHION TYPE F



T	ΑE	3L	E

<u>.</u>		
SPEED MPH	TAPER	MINIMUM LENGTH FEET
LESS THAN 40	7:1	70
40 TO 55	10:1	100
60 TO 75	15:1	150

NOTES FOR CRASH CUSHION TYPE F

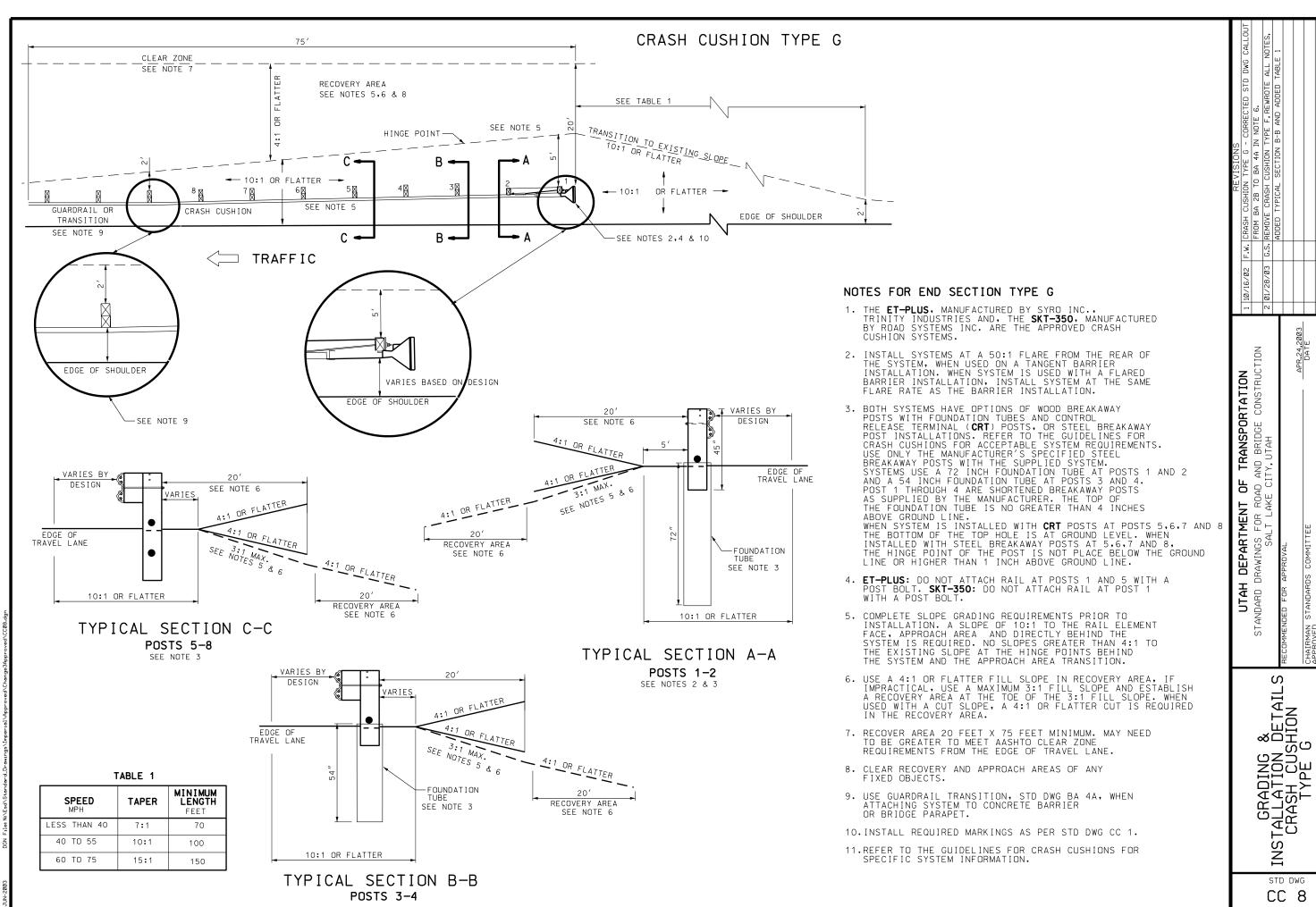
- 1. THE QUADTREND-350 IS MANUFACTURED BY ENERGY ABSORPTION SYSTEMS. USE MANUFACTURER'S AND UDOT'S REQUIREMENTS WHEN INSTALLING SYSTEM.
- USE THE QUADTREND-350 WHEN A DIRECT ATTACHMENT TO A CONCRETE BARRIER OR BRIDGE PARAPET IS REQUIRED AND THERE IS LESS THAN 125 FEET OF LONGITUDINAL SPACE IN FRONT OF THE HAZARD.
- 3. INSTALL CONCRETE PAD AS PER MANUFACTURER'S REQUIREMENTS.
- 4. PLACE CABLE ANCHOR FOUNDATION IN SUCH A MANNER THAT THE REDIRECTING CABLE LAYS 6:1 OR FLATTER ON TOP OF THE GROUND, AND THE FOUNDATION WITH THE CABLE ANCHOR BRACKET, WHEN ATTACHED TO FOUNDATION, DOES NOT EXCEED 4 INCHES ABOVE GROUND LEVEL. DO NOT BURY THE REDIRECTION CABLE. REFERENCE STD DWG SN 6, BREAKAWAY POST STUB DETAIL.
- 5. USE A 4:1 OR FLATTER SLOPE IN RECOVERY AREA. WHEN USED WITH A CUT SLOPE A 6:1 OR FLATTER FILL AREA 12 FT. X 25 FT. IS REQUIRED PRIOR TO THE CUT SLOPE. INCLUDE THIS AREA AS PART OF THE RECOVERY AREA.
- 6. CLEAR THE RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS.
- 7. ATTACH SAND CONTAINERS AT POSTS 1, 3 AND 4.
- 8. COMPLETE ALL GRADING REQUIREMENTS PRIOR TO SYSTEM INSTALLATION.
- 9. INSTALL REQUIRED MARKING AS PER STD DWG CC 1.
- 10. MAINTAIN AASHTO CLEAR ZONE FOR SPEEDS GREATER THAN 40 MPH. DEPENDING ON SYSTEM OFFSET, CLEAR ZONE MAY EXTEND OUTSIDE OF THE RECOVERY AREA.

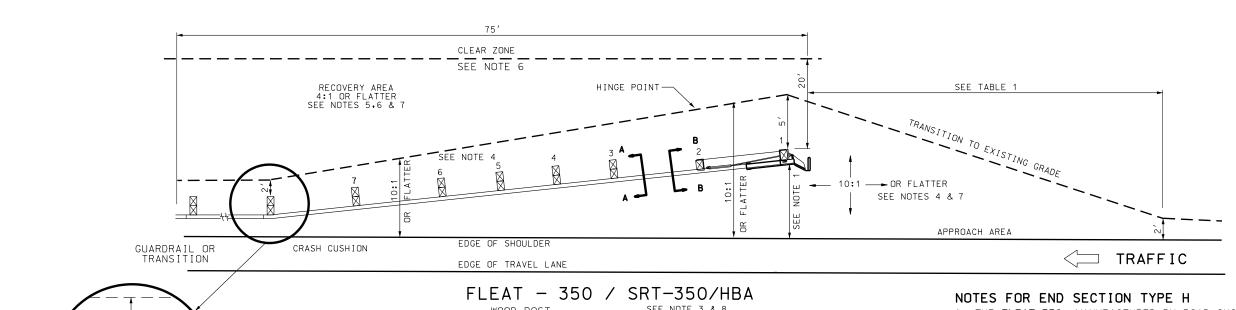
VARIES BY DESIGN	12'	8′
10:1 OR FLATTER	SEE NOTE 4 6:1 OR FLATTER	-
TRAVEL LANE SEE NOTE EDGE OF SHOUL	_DER	SEE NOTE 5 TER
TYPICAL	L SECTION A-A	

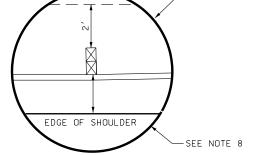
UGN File: Ni/Esd/Standard_Urawings/Imperial/Approved/Change3Approved/CUV/.dg

-2003

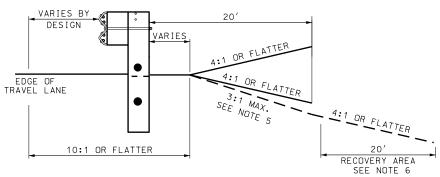
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah S GRADING & INSTALLATION DETAILS CRASH CUSHION TYPE F STD DWG CC 7







SEE NOTE 3 & 8 WOOD POST OPTION SHOWN SEE NOTE 2



TYPICAL SECTION A-A POST 3-8

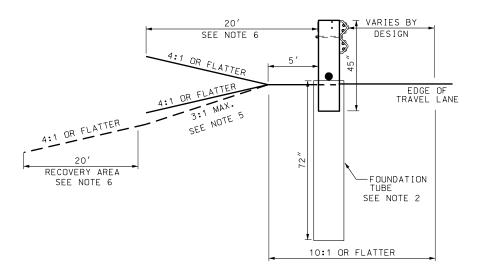


TABLE 1

SPEED MPH	TAPER	MINIMUM LENGTH FEET
LESS THAN 40	7:1	70
40 TO 55	10:1	100
60 TO 75	15:1	150

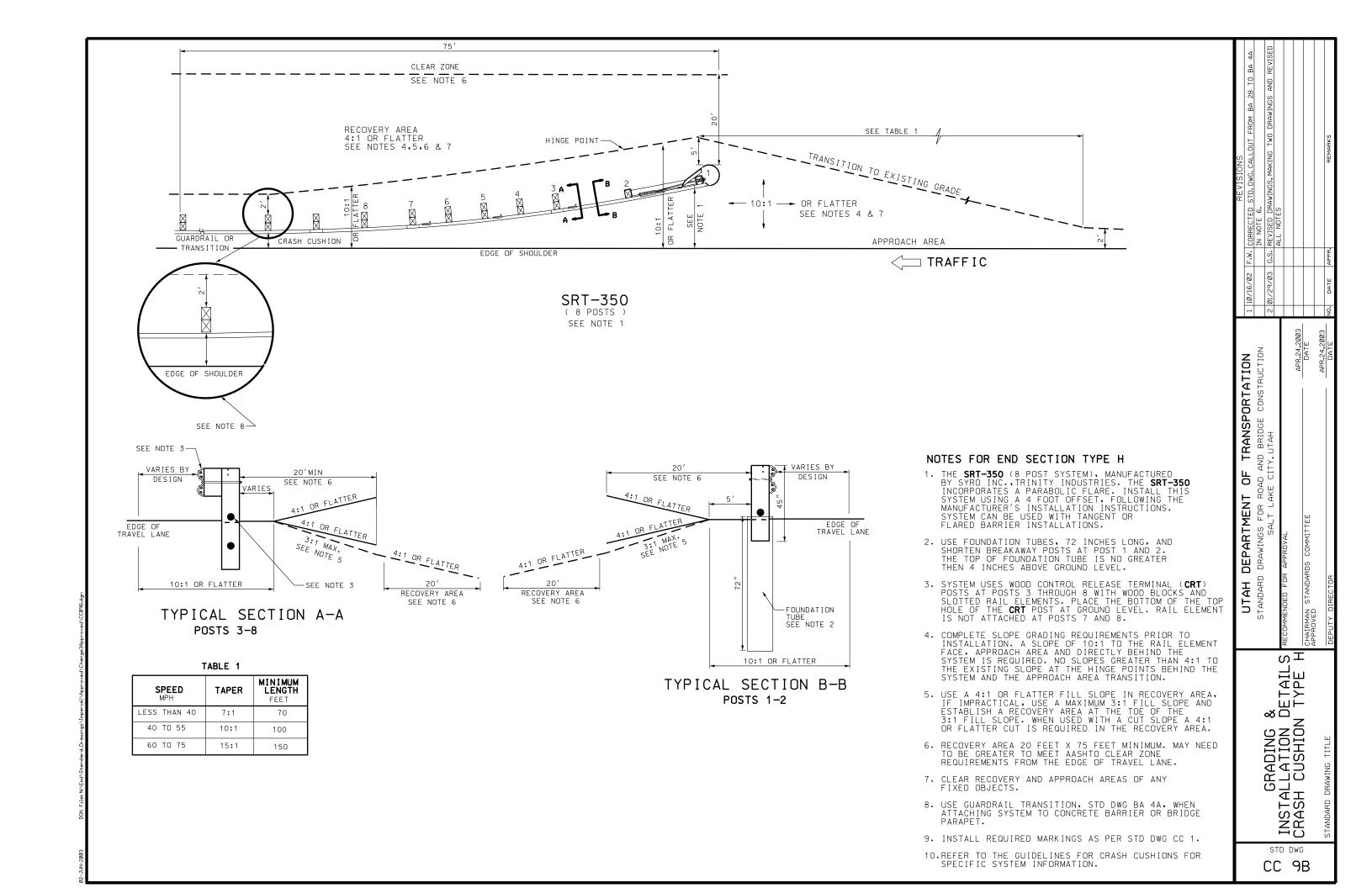
TYPICAL SECTION B-B POST 1-2 SEE NOTES 2 & 3

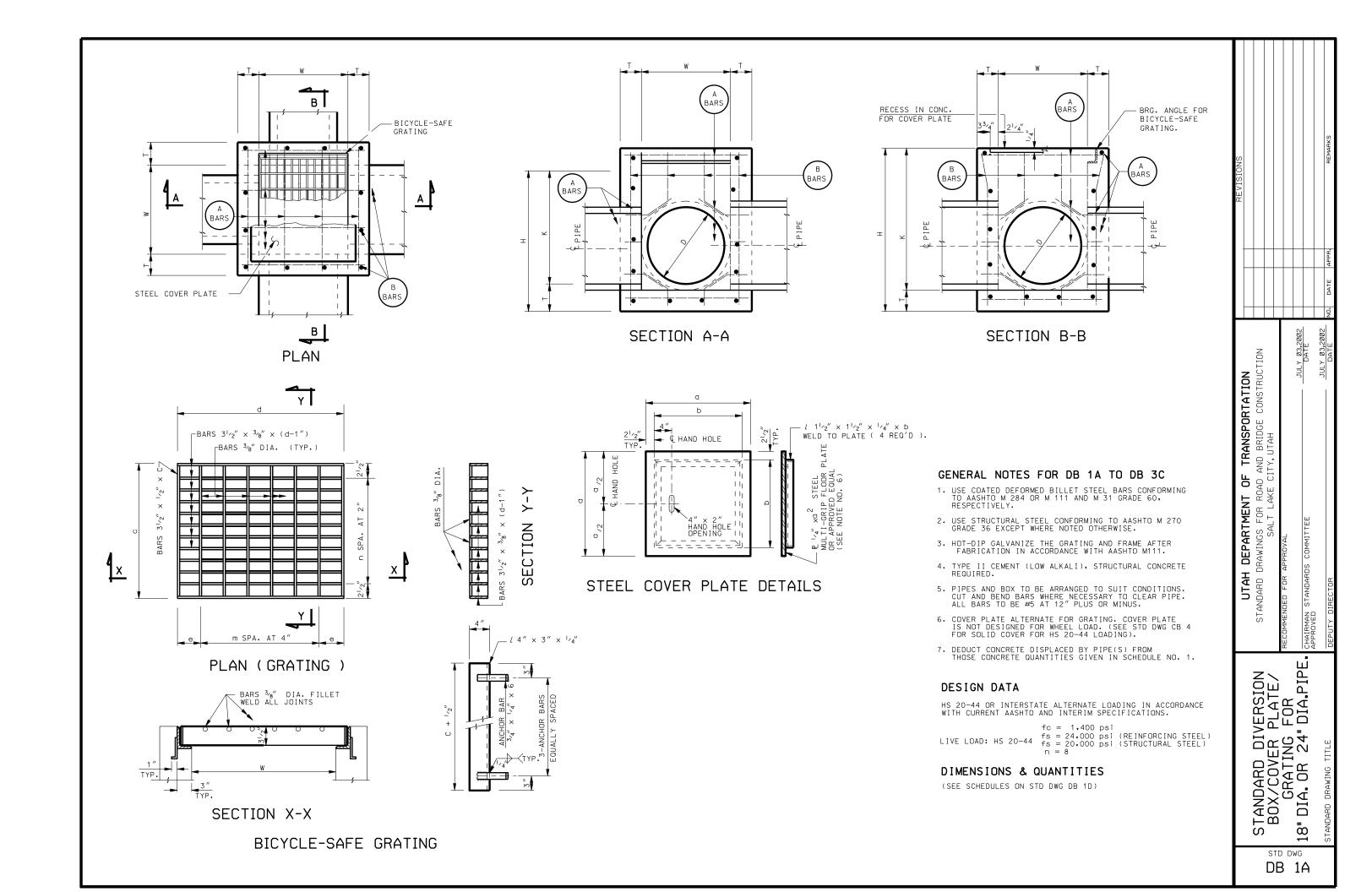
- 1. THE FLEAT-350, MANUFACTURED BY ROAD SYSTEMS, INC.
 AND THE SRT-350/HBA, MANUFACTURED BY SYRO INC.,
 TRINITY INDUSTRIES. BOTH SYSTEMS INCORPORATE A
 STRAIGHT LINE FLARE. INSTALL SYSTEMS WITH A 4 FOOT
 OFFSET WHEN INSTALLED WITH A TANGENT BARRIER
 INSTALLATION. WHEN USING A FLARED BARRIER
 INSTALLATION INSTALL AT THE SAME FLARE RATE AS THE
- 2. FLEAT-350 USES WOOD CONTROL RELEASE TERMINAL (CRT)
 POSTS AND WOOD BLOCKS, OR STEEL BREAKAWAY POSTS
 WITH ROUTED WOOD BLOCKS OR COMPOSITE BLOCKS.
 SYSTEM USES FOUNDATION TUBES AT POSTS 1 AND 2 FOR
 BOTH APPLICATIONS. THE TOP OF FOUNDATION TUBE IS NO GREATER THAN 4 INCHES ABOVE GROUND LINE. WHEN SYSTEM IS INSTALLED USING CRT POSTS, THE BOTTOM OF TOP HOLE IS AT GROUND LEVEL.
 WHEN SYSTEM IS INSTALLED USING STEEL
 BREAKAWAY POSTS, USE ONLY THE MANUFACTURER'S
 SPECIFIED STEEL BREAKAWAY POSTS AND THE BREAKAWAY JOINT IS PLACED 1 INCH ABOVE GROUND LINE.
- 3. SRT-350/HBA USES STEEL HINGED BREAKAWAY POSTS AT POSTS 1 AND 2 AND STANDARD CRT POSTS AT POSTS 3 THROUGH 6. USE ONLY THE MANUFACTURER'S SPECIFIED STEEL BREAKAWAY POSTS. THE BREAKAWAY JOINTS ARE PLACED AT GROUND LINE. THE BOTTOM OF THE TOP HOLE OF THE CRT POSTS ARE PLACED AT GROUND LEVEL. THE LAST POST OF THE GUARDRAIL INSTALLATION, WHEN THIS SYSTEM IS USED, IS REQUIRED TO BE A CRT POST AND IS NOT PART OF THIS SYSTEM. THIS SYSTEM CANNOT BE USED WITH A TRANSITION ELEMENT STD DWG BA 4A, EXCEPT AS SPECIFIED IN NOTE 8.
- 4. COMPLETE SLOPE GRADING REQUIREMENTS PRIOR TO INSTALLATION, A SLOPE OF 10:1 TO THE RAIL ELEMENT FACE, APPROACH AREA AND DIRECTLY BEHIND THE SYSTEM IS REQUIRED. NO SLOPES GREATER THAN 4:1 TO THE EXISTING SLOPE AT THE HINGE POINTS BEHIND THE SYSTEM AND THE APPROACH AREA TRANSITION.
- 5. USE A 4:1 OR FLATTER FILL SLOPE IN RECOVERY AREA, IF IMPRACTICAL, USE A MAXIMUM 3:1 FILL SLOPE AND ESTABLISH A RECOVERY AREA AT THE TOE OF THE 3:1 FILL SLOPE. WHEN USED WITH A CUT SLOPE, A 4:1 OR FLATTER CUT IS REQUIRED IN THE RECOVERY AREA.
- 6. RECOVERY AREA 20 FEET X 75 FEET MINIMUM. MAY NEED TO BE GREATER TO MEET AASHTO CLEAR ZONE REQUIREMENTS FROM THE EDGE OF TRAVEL LANE.
- 7. CLEAR RECOVERY AND APPROACH AREAS OF ANY FIXED OBJECTS.
- 8. USE GUARDRAIL TRANSITION, STD DWG BA 4A, WHEN ATTACHING THE FLEAT-350 SYSTEM TO CONCRETE BARRIER OR BRIDGE PARAPET. THE SRT-350/HBA CANNOT BE DIRECTLY ATTACHED TO THE TRANSITION ELEMENT. AN ADDITIONAL 12½ FOOT SECTION OF STANDARD GUARDRAIL WITH A CRT POST AT THE ATTACHMENT POST IS REQUIRED.
- 9. INSTALL REQUIRED MARKINGS AS PER STD DWG CC 1.
- 10. REFER TO THE GUIDELINES FOR CRASH CUSHIONS FOR SPECIFIC SYSTEM INFORMATION.

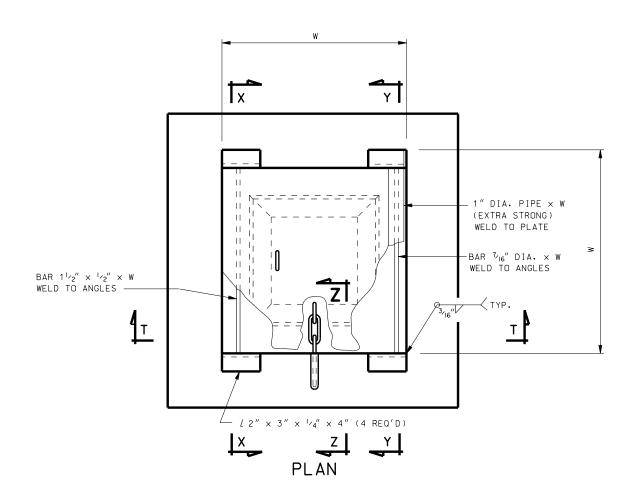
		UEPAKIMENI UF IKANSPUKIALIUN 1 01/29/03 G.S. NEW DRAWING	DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		INSIALLATIUN UETAILS RECOMMENDED FOR APPROVAL	APR.24,2003	CHAIRMAN STANDARDS COMMITTEE DATE	APR 24 2003
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STD DWG

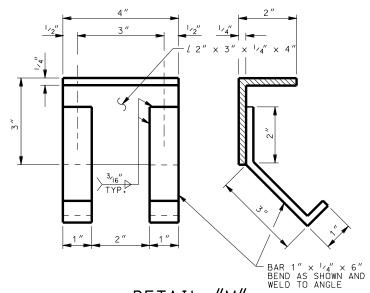
CC 9A



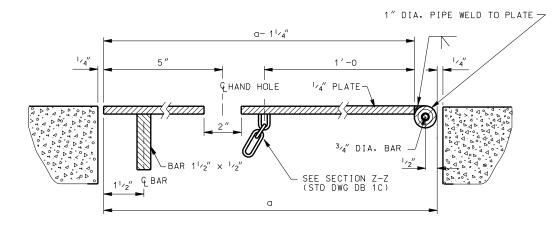




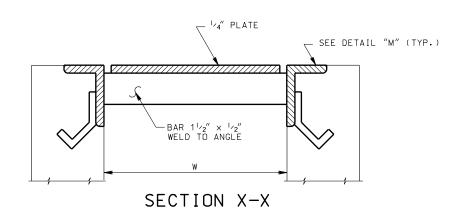
DETAILS OF SHEET COVER PLATE (SECTION Z-Z IS ON STD DWG DB 1C)

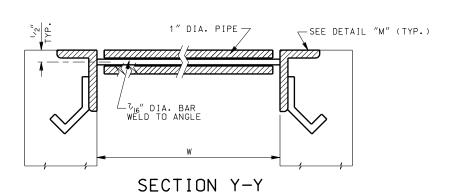


DETAIL "M"
HINGED LID DETAILS



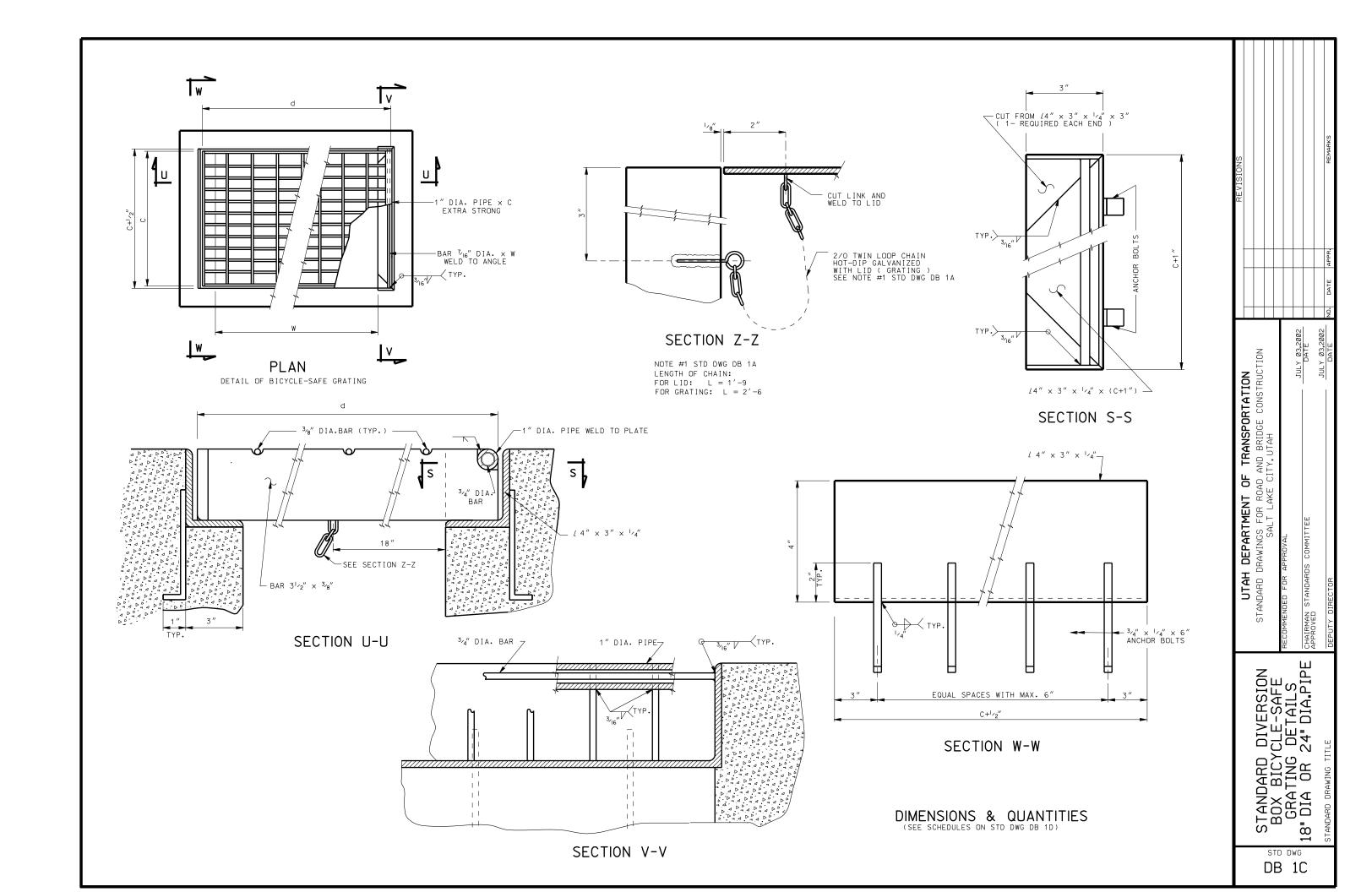
SECTION T-T

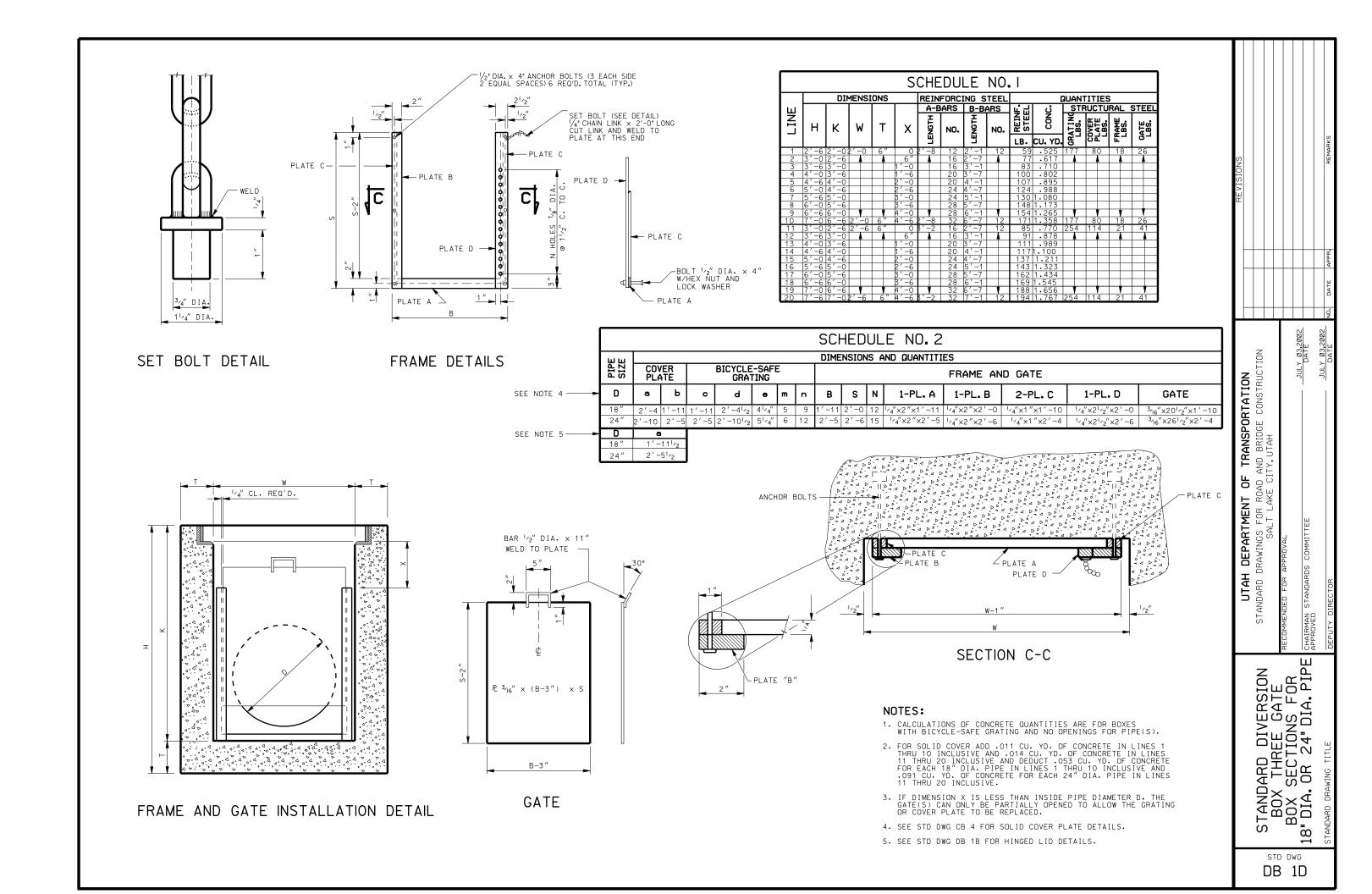


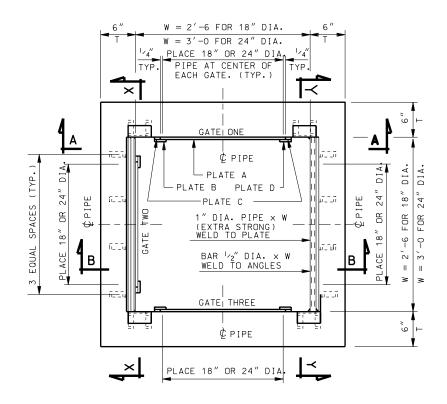


DIMENSION & QUANTITIES
(SEE SCHEDULE ON STD DWG DB 1D)

STD DWG BH 1B	STANDARD DIVERSION STANDARD DRAWINGS FOR STANDARD DRAWINGS FOR STANDARD DRAWING FOR APPROVAL BOX HINGED LID RECOMMENDED FOR APPROVAL STANDARD DRAWING TITLE STANDARD DRAWING TITLE OFFICIAL POR RECOMMENDED FOR APPROVAL STANDARD DRAWING TITLE	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE APPROVED ADDRESS COMMITTEE ADD	ON STATE	REVISIONS:	IUNS
		טברטון טותבטוטת			

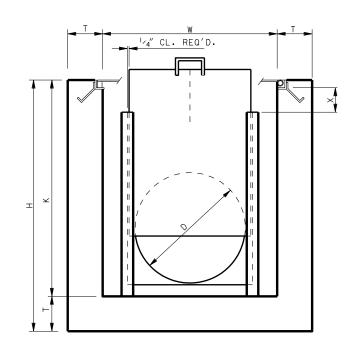




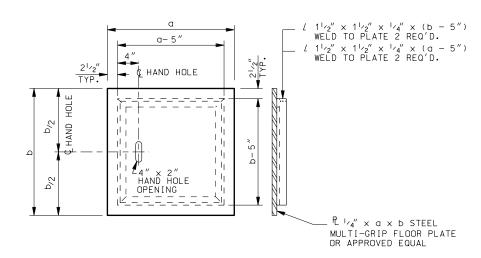


3 GATE PLAN

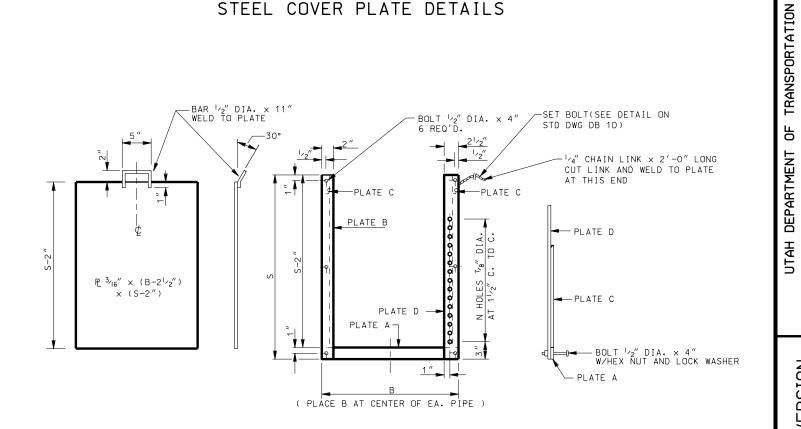
(SECTION X-X Y-Y & B-B ARE ON STD DWG DB 1F)



SECTION A-A



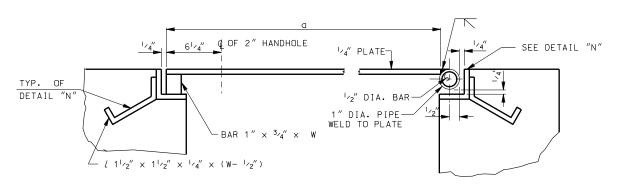
STEEL COVER PLATE DETAILS



FRAME AND GATE INSTALLATION DETAIL DIMENSIONS AND QUANTITIES

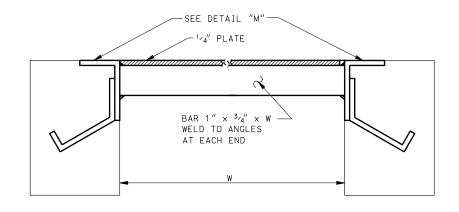
SEE SCHEDULES ON STD DWG DB 1F

							REMARKS
							NO. DATE APPR.
							DATE
		_					ģ
DNSTRUCTION				JULY 03,2002	DATE	SMS.2002	DATE
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE		DEPUTY DIRECTOR
	ROX THREE GATE		BOX SECTIONS FOR	18" DIA OR 24" DIA DIPE			STANDARD DRAWING TITLE
_	s DE	тг 3	1	wG .E			נט
_							



SECTION B-B

(SECTION IS TAKEN FROM STD DWG DB 1E)



SECTION X-X
(SECTION IS TAKEN FROM STD DWG DB 1E)

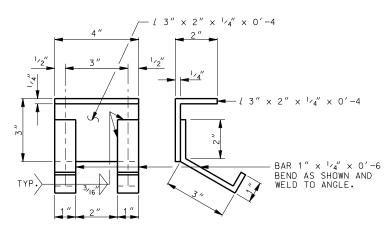
SEE DETAIL "M" 1" DIA. PIPE 14" PLATE	
L'2" DIA. BAR WELD TO ANGLES	
W	

SECTION Y-Y
(SECTION IS TAKEN FROM STD DWG DB 1E)

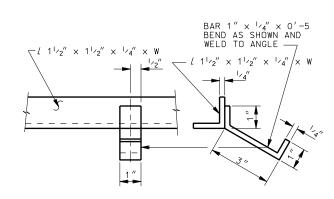
	SCHEDULE NO.1 DIMENSIONS REINFORCING STEEL QUANTITIES																
		DIM	IENS	IOI	NS		RE	ΙN	FORCI	NG ST	EEL		ſ	TAAUC	ITIES		
				Т			Α	-B	ARS	B-BA	ARS		.:	STR	UCTUR	AL S1	EEL
LINE	Н	K	W		Т	X	u Edina -		NO.	LENGTH	NO.	REINF STEEL	CU. YD.	PIPES, BARS & ANGLES	COVER PLATE 1bs.	FRAME* lbs.	GATE lbs. EA.
1	2′-6	2′-Ø	2'-	6	6"	Ø	3′	-2	12	2′-1	12	66	Ø . 672	31	85	1,4	25
2	3′-Ø	2′-6		4	A	6"		1	16	2′-7		85	Ø . 783	I ♣	.	A	-
3	3′-6 4′-Ø	3′-Ø 3′-6	-+	+		1′-Ø 1′-6			16 20	3′-1 3′-7		91 111	0.894 1.005				
5	4'-6	4'-0		+		2'-0			20	4'-1		117	1,116				
6	5′-0	4'-6		+	-	2'-6			24	4'-7		137	1.227				
7	5′-6	5′-Ø		+		3′-Ø			24	5′-1		143	1.338				
8	6′-Ø	5′-6		7		3′-6			28	5′-7		163	1.450				
9	6'-6	6′-Ø	*	T	1	4'-0	١		28	6'-1	*	169	1.561	1		- 1	* 1
10	7′-Ø	6′-6	2'-	6	6"	4′-6	ά	-2	32	6′-7	12	188	1.672	31	85	14	25
11	3′-Ø	2′-6	3′-	Ø	6"	Ø	3′	-8	16	2′-7	12	94	0.944	35	118	18	41
12	3′-6	3′-Ø		_	A	6"		1	16	3′-1	\perp	100	1.074	.	.		\blacksquare
13	4'-0	3′-6		_	\perp	1'-0			20	3′-7		121	1.203				
14	4'-6	4'-0		4	\perp	1′-6			20	4'-1		128	1.333				
15	5′-Ø	4′-6		\dashv	-	2′-Ø			24	4'-7	\vdash	150	1.463				
16 17	5′-6	5′-0		+	-	2′-6			24	5′-1		156	1.592	\vdash			-
18	6′-Ø 6′-6	5′-6 6′-Ø		+	-	3′-Ø 3′-6			28 28	5′-7 6′-1		184 183	1.722 1.852				
19	7'-0	6'-6		\dashv	•	4'-0	۰,		32	6'-7	.	205	1.981	.	├		\vdash
20	7'-6	7'-0	3'-	а	6"	4'-6	3′	-8	32	7'-1	12	211	2.111	35	118	18	41

* PLATES A TO D PER GATE

						SCHEDL	JLE NO.	2							
E						DIMENSION	IS AND QUA	NTITIES							
PIPE SIZE		VER ATE		FRAME AND GATE											
	Ø	Ф	В	S	Z	PLATE-A 1 EACH	PLATE-B 1 EACH	PLATE-C 2 EACH	GATE SIZE	PLATE-D 1 EACH					
18"	2′-7	2′-5½	1′-11	2′-Ø	12	1/4"×2"×1′-11	1/4"×2"×2'-Ø	½"×1"×1′-1Ø	3/16"×201/2"×1'-10	1/4"×21/2"×2'-Ø					
24"	3′-1	2'-111/2	2'-5 2'-6 15 \(\frac{1}{4}\)\"\\\ 2'\\\ 2'\-5 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\												



DETAIL "M"



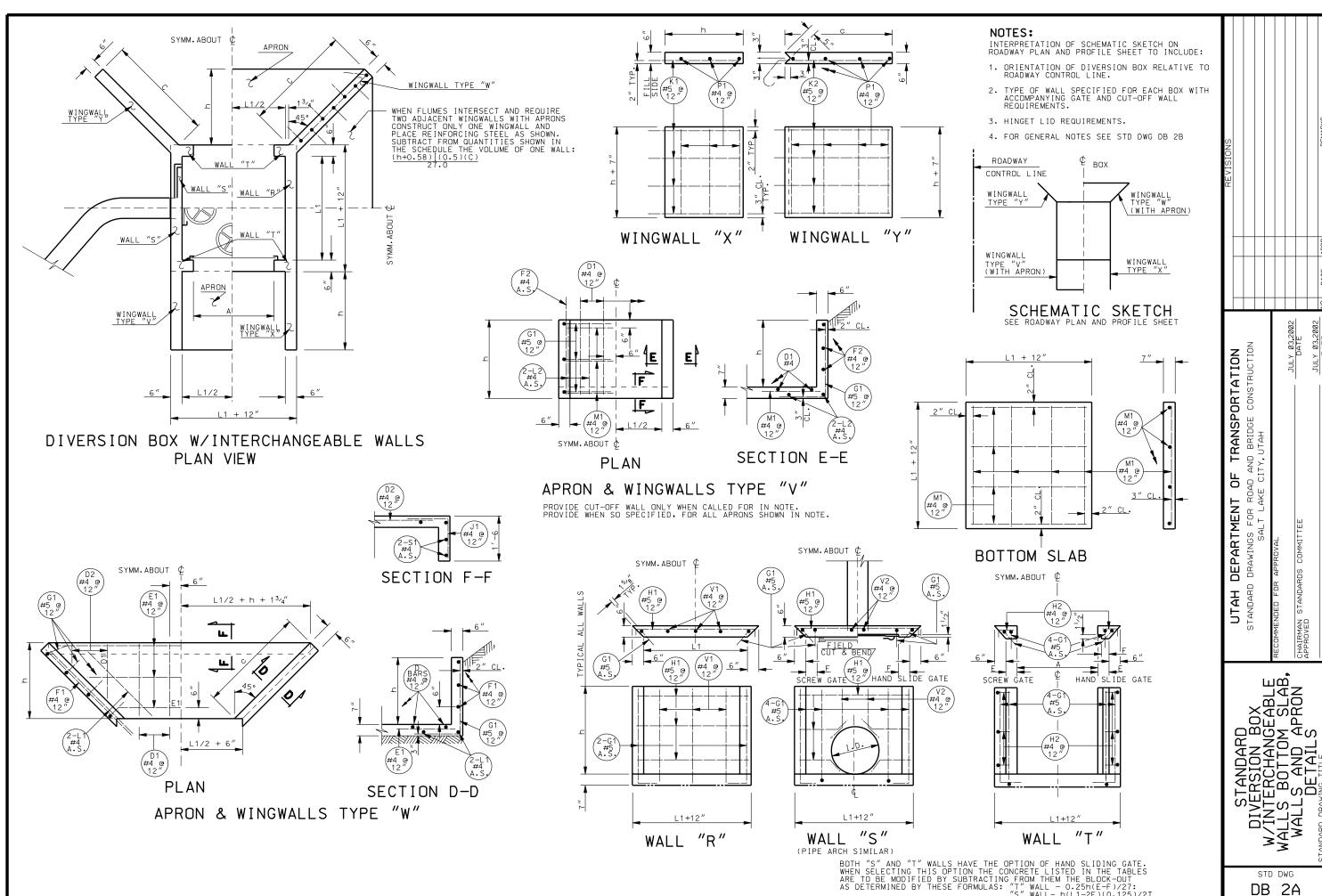
DETAIL "N"

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
MENDED FOR APPROVAL

STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18"DIA. OR 24" DIA.PIPE

STD DWG

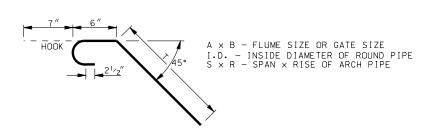
DB 1F



BOTH "S" AND "T" WALLS HAVE THE OPTION OF HAND SLIDING GATE. WHEN SELECTING THIS OPTION THE CONCRETE LISTED IN THE TABLES ARE TO BE MODIFIED BY SUBTRACTING FROM THEM THE BLOCK-OUT AS DETERMINED BY THESE FORMULAS: "T" WALL - 0.25h(E-F)/27: "S" WALL-h(L1-2F)(0.125)/2T

DB 2A

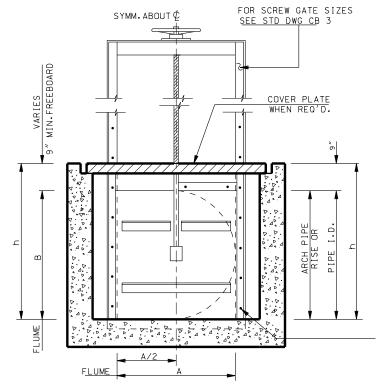
	DIVER	RSION BOX S	SIZES ARE B	ASED ON BO	TH THE	T									W	INGW	ΔΙΙς	WITH	ΔΤΤΔ	CHED	ΔPRO	N.												
	ROUNE	D PIPE. THE	SIZES AND EY MAY BE U PIPES OR R	SED WITH E	ITHER	F		—						TYPE		111011		*******		TOTILD	AI 110							TYF	E V					
P I PE NUMBER	ONS	FLUME A ×		DIMEN	ISIONS		₩ E1,[<u> </u>	X = NO. — CUT I B = NO PE	OF SET INE OF BA	, 77	E. TH = <u>∞ +</u> 2	- N	⊖ 1′-2 G1	<u>†</u> D1	,F1,L	.1,S1	1'-1 J1	REIN	FORCING STEEL LB.	CONCRET CUBIC YARDS	E		′ -2 G1		L2.D1.	M1,F2,S		-	1'-	RE	INFORCI STEEL LB	CUE	RETE 3 I C RDS NOW BE WIN
LINE	DIMENSIONS IN INCHES	SCREW GATE	HAND SLIDE GATE	c E F	h l	L 1 (w ✓ W	1 	AVE. L'GTH	< u	D2 I V B	11/5	D1 STH N	G1 ⊖ L′GTH	F1	N O. L'GTH	J1	I N	wITHOU	WALL WITH CUT-OF WALL	WITHOU CUT-OFF WALL WITH	CUT-OF	G1 ⊖ L′G	TH 0. L'G		D1 GTH N	M1 .′GTH 0	F2	N	IN	S1 PH	CUT-OFF WALL WITH	WALL WITHOUT CUT-OFF	WITH CUT-OFF WALL LINE
2 3	12 18 24	18×18 24×24	18×18 3 24×24 3	'-2 6" 3 -10 6" 3	" 1'-9 2 " 2'-3 2 " 2'-9 3	2′-6 3 3′-0 4	5'-3 5'-5 1'-9 6'-1 1'-3 8'-5	1 🛦 3	4'-4 : 5'-4 : 6'-4 :	1'-1 0 1'-7 7 2'-1 1'	" Å 2	1'-1 3'- 1'-7 3'-	-1 3 2 -7 3 2'		10 4'-0	6 2'-9 6 3'-5	A A	6 5'-5 9 5'-11 9 8'-5	91.	4 92.7 9 116.2	0.362 0. 0.577 0. 0.832 0.	.690 : .979 2		7 6 1'- 1 8 2'-	5 3	′ -1 3 ′ -7 3		3'-1 3'-7	4 2'- 6 A	5 3'	-2 Å 5	2.4 63 1.9 84	.2 0.227 .9 0.358 .0 0.518	0.417 2 0.586 3
9 4 5 6	30 36 42	30×30 36×36 42×42	5	'-7 8" 5 '-4 8" 5 '-0 8" 4 '-9 9" 5	" 3'-9 4 " 4'-3 4'	′-4 5 ′-10 6	'-2 10'-4 '-7 11'-9 '-2 13'-4	4 5	8'-8 9'-9	2'-7 7 3'-1 1' 3'-7 7	-1 3 " 4	1'-7 4'- 2'-1 4'- 2'-1 5'- 2'-7 5'-	-7 4 3 <i>′</i> -1 5 4	′-11 5′-1 ′-5 5′-7	10 4'-9 12 5'-6 14 6'-2 16 6'-11	8 4′-10 10 5′-6		12 10'-4 12 11'-9 15 13'-4 16 14'11	122. 149. 198.	.7 182.8 .1 255.4	1.169 1. 1.536 1. 1.934 2.	.739 3 .166 4	3'-11 5'- 4'-5 5'-	7 10 3'-	5 4	′ –7 4 ′ –1 5	4'-6 4 5'-0 5 5'-6 5	4'-7 5'-1	8 10	6 4'- 6 5'- 7 5'- 8 6'-	-0 1 ¹	5.6 131 8.0 155	0.731 0.953 0.5 1.205	1.044 5 1.304 6
7 8 9 10	48 36×22 43×27 50×31	48×48 36×24 48×30 60×36	36×24 3	'-9 9" 5 '-8 8" 5 '-3 8" 4 '-9 9" 5	" 2'-7 4 " 3'-0 5		6'-9 14'-1 6'-7 9'-5 6'-7 11'-3 6'-9 13'-	3 3	10'10 - 7'-6 1 8'-11 2 10'-5 2	′-11 1 2′-4 1′	1" 2	1'-5 3'	-5 4 2 -10 5 3	′-9 3′-11 ′-2 4′-4	10 3'-10 10 4'-5 12 4'-11	6 3'-2 6 3'-9		16 14 11 10 9'-5 11 11'-3 15 13'-1	92. 108.	6 120.0 5 139.5	2.414 2. 0.832 0. 1.123 1. 1.417 1.	.996 2 .318	1'-11 6'- 2'-9 3'- 3'-2 4'- 3'-5 4'-	11 6 2'- 4 8 2'-	3 3 8 3'	′-5 4 -10 5	6'-2 6 5'-0 3 6'-0 4 7'-2 4	3′-5 3′-10	6 8 8	8 6 5' 7 6' 9 7'	-0 6 -0 9	3.4 78 2.6 110	9.6 1.503 .7 0.545 0.8 0.744 0.5 0.952	0.636 8 0.854 9
x 0 11 12 13	58×36 65×40 72×44	60×36 72×42 72×48	5			7′-6 8	''-9 13'-1 ''-9 15'- ''-9 16'-;	7 🔰 5	10'-10: 12'-2: 12'-6:		" V 4		-11 8 4	'-11 5'-1 '-3 5'-5 '-7 5'-9	12 5'-6 14 5'-11 14 6'-5	10 5′-4	† †	15 13'-11 18 15'-7 18 16'-3		.0 256.9	1.709 1. 2.040 2. 2.321 2.	.311	4'-3 5'-		9 🔰 4′	′ –7 7 –11 8	7′-2 5	4'-7 4'-11		\rightarrow	-2 1 13	2.0 154 2.9 178	4.6 1.128 3.3 1.367 5.7 1.534	1.255 11 1.511 12
	SCREW ROUND	GATE FRAME PIPE: THE	IZES ARE BA SIZES AND Y MAY BE US PIPES OR R	THE DIAME SED WITH E	TERS OF ITHER			NGWAI		' I THOL	JT ATT	ACHED WINGWA		١			WALL	R		WA	LL T	YPE		ALL S						WALL .	Γ		ВОТТ	OM SLAB
NUMBER	STONS	FLUME A ×		DIMENS	SIONS		K1.P1	-	INFORCING STEEL LB.	RETE BIC IDS	P1 &		1 K2 9NI 02	STEEL LB. CONCRETE CUBIC		2 <u>V1</u>		<u>I</u> H1	RCING	CONCRETE CUBIC YARDS	⊕ 1′-i	2	<u>/2</u>		\blacksquare	RCING EEL B.	BIC BIC SDS		10" 1'-2	H2 G1	RC ING EEL	LB. ONCRETE CUBIC YARDS	M1	NFORCING STEEL LB. DNCRETE CUBIC
LINE	DIMENSIONS IN INCHES	SCREW GATE	HAND SLIDE GATE	C E F	h l	L 1 L	K1 'GTH NO.L'	P1 GTH N	RE INFO	CONC CU YAF	K2	P1 H O. L'GT		CONC	Ğ G1	STH N	H1	V1	oz REINFO	CDNG	G1 ← L'0	GTH N	H1		V2 GTH N	REINFORCIN STEEL LB.	JA P	G1 ← L′G	N.	H2 ⊖ L′GTH	OZ REINFO	CONC		ST ST CONG
1 2	12 18	18×18		'-6 6" 3	" 1'-9 2 " 2' 7 2	·'-0 2	2'-7 3 1'	′-11 3 ′-5 3	11.9	0.076 2 0.118 3	′-9 3′-1 ′-5 4′-	0 3 1'-1	1 3 15			-1 2 2 -7 A 3		2 1'-11		.0 0.081 8 0.125			2'-8 4'			22.8 0 31.2 0		-11 3'- '-5 3'-		10 1′-8	4 17.3		2'-8 8 3'-2 8	14.3 0.19
3	24	24×24 30×30	24×24 3′	-10 6" 3	" 2'-9 3 " 3'-3 3'	3'-0 3 '-10 4	3'-7 4 2'	′-11 4	22.7	0.170 4	′-1 5′-	2 4 2'-1	1 4 29	9.3 0.229	2'-11 4'	-1 3	'-8 5'-4 '-6 6'-2	3 2'-11	3 31.	1 0.179	2'-11 4'	-1	3'-8 5'	-4 3 1'	-11 1	35.0 0 47.7 0	.120 2	'-11 4'-	-1	T T	6 23.7 8 28.0	0.076	3′-8 10	24.5 0.3
5 6	36 42 48	36×36 42×42 48×48	6	'-4 8" 5 '-0 8" 4	, ,,	′-4 4 ′-10 5		′ –11 5 ′ –5 5	37.0 41.3 54.6	0.301 5 0.380 6	'-7 6'- '-3 7'-	3 5 3'-1 4 5 4'-5 1 6 4'-1	1 6 50 5 6 55	0.0	3'-11 5' 4'-5 5'	-1 5 -7 5	'-0 6'-8	3 4 3'-11	4 48. 5 63.	8 0.422	3'-11 5' 4'-5 5'	-1 -7	5'-0 6' 5'-6 7' 6'-2 7'-	-8 4 2 · -2 5 2 ·	-5 3 -8 3	53.9 0 66.0 0 74.0 0	.205 3°	-11 5'- '-5 5'-	-1 -7		8 30.1 10 34.4 10 36.5	0.144	5'-0 12 5'-6 14	40.1 0.6 51.4 0.7
8 9	36×22 43×27 50×31	36×24 48×30 60×36	36×24 3	'-8 8" 5 '-3 8" 4		1'-4 3 5'-4 3	3'-5 3 2' '-10 4 3'	′-9 3 ′-2 4	16.2	0.152 3 0.199 4	′-11 5′- ′-6 5′-	3 2'-9	9 4 23	3.0 0.208 3.9 0.274	2'-9 3' 3'-2 4'	-11 5 -4 6	′-0 6′-8	3 2'-9 3 3'-2	4 36. 5 43.	4 0.232	2'-9 3'-	-11 -4	5'-0 6' 6'-10 7' 7'-2 8'-	-8 3 1'- -6 3 2'	-10 3 -1 5	40.9 0	.150 2 .206 3	'-9 3'- '-2 4'- '-5 4'-	11		6 23.0 6 24.8 8 28.4	0.088	5'-0 12 6'-0 16	40.1 0.6 64.1 0.8 76.6 1.21
× 11 12	58×36 65×40 72×44	60×36 72×42 72×48	5 5	'-4 9" 5 '-9 9" 5	″ 3′-9 6	6′-6 4 ′′-6 4	1'-7 5 3' '-11 5 4'	′ –11 5 ′ –3 5	37.0 39.8	0.301 5 0.353 6	'-7 6'-	8 5 3'-1 1 5 4'-3	1 6 50 3 6 54	0.5 0.418 0.5 0.486 0.5 0.567	3'-11 5' 4'-3 5'	-1 7 -5 ▼ 8	'-2 8'-1 '-2 9'-1	0 4 3'-11	6 63. 7 72.	2 0.488 2 0.608	3'-11 5' 4'-3 5'	-1	7'-2 8'- 8'-2 9'-	-10 4 2' -10 4 2'	-5 5 -7 6	66.1 0	.275 3	'-11 5'- '-3 5'-	-1 -5 ▼	V V	8 30.1 8 31.5	0.139	7'-2 16 8'-2 18	76.6 1.21 98.2 1.56 98.2 1.56



180° STANDARD HOOK DETAIL

NOTES:

- 1. FOR TRANSITION STRUCTURE FROM DIVERSION BOX TO TRAPEZOIDAL SHAPED CHANNEL WITH BOTTOM WIDTH OF 1'-0". SEE STD DWG CB 3
- 2. ALL DIMENSIONS ARE ROUNDED TO THE NEAREST WHOLE INCH. THOSE DIMENSIONS SHOWN FOR REBAR ARE OUT—TO—OUT OF BAR.
- 3. WHEN LAYING-OUT SET REBAR, USE $^{\prime\prime}$ \ll $^{\prime\prime}$ AND $^{\prime\prime}$ w $^{\prime\prime}$ DIMENSIONS NOT AVERAGE LENGTH OF REBAR.
- 4. USE STANDARD 180 DEGREE HOOK FOR K2 BAR AS NOTED.
- 5. USE #5 REBARS FOR K1.K2.G1 AND H1 MARK NUMBERS. ALL REMAINING MARK NUMBERS ARE #4 REBARS.
- 6. SAME SIZE BOX IS REQUIRED FOR BOTH METAL PIPE AND CONCRETE PIPE.



NOTES:

- 1. USE COATED DEFORMED BILLET REINFORCING STEEL BARS CONFORMING TO ASSHTO M 284 OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
- 2. USE TYPE II CEMENT (LOW ALKALI) AND STRUCTURAL CONCRETE UNLESS SPECIFIED OTHERWISE.
- 3. CHAMFER ALL EXPOSED CONCRETE CORNERS $^{3}4^{\prime\prime}$ EXCEPT WHERE NOTED OTHERWISE.
- 4. USE CLASS AA(AE) CAST-IN-PLACE CONCRETE EXCEPT WHERE NOTED OTHERWISE. SPECIFIED OTHERWISE.
- 5. EACH LINE DESCRIBES THE QUANTITIES FOR ONE WALL OR SLAB OF THE TYPE SPECIFIED. USE THIS DRAWING IN CONJUNCTION WITH ROADWAY PLAN AND PROFILE, AND ROADWAY SUMMARY SCHEDULES TO DETERMINE THE SPECIFICS CONCERNING EACH DIVERSION BOX.

DESIGN DATA

HS-20 OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

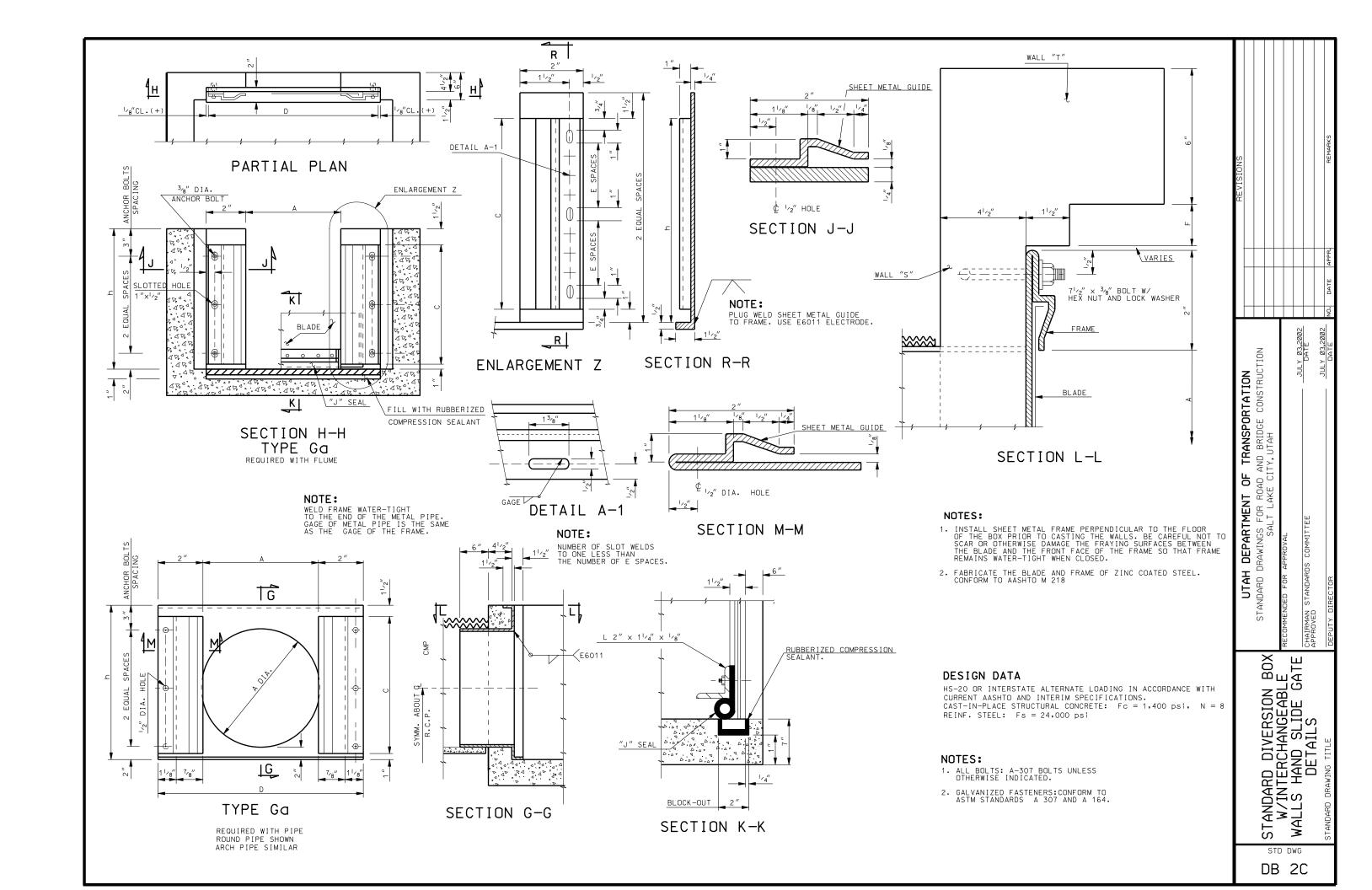
CAST-IN-PLACE STRUCTURAL CONCRETE: Fc = 1,400 psi N = 8

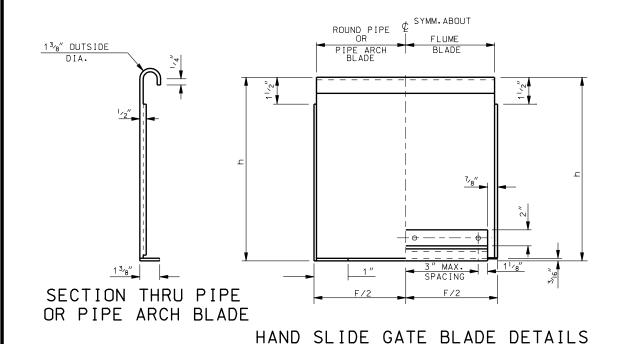
REINF. STEEL: Fs = 24,000 psi

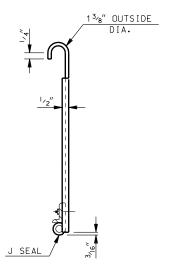
CONSULT GATE FABRICATOR FOR SIZE AND SPACING OF ANCHOR BOLTS BEFORE PLACING REBAR. ADJUST REBAR TO CLEAR ANCHOR BOLTS.

SCREW GATE INSTALLATION DIAGRAM

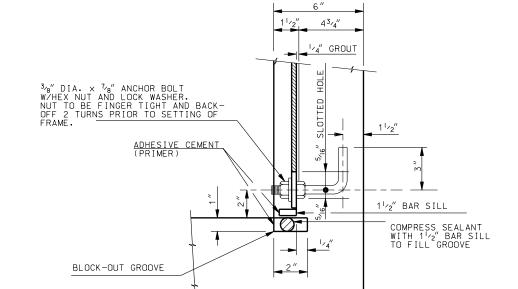
OF TRANSPORTATION
DAD AND BRIDGE CONSTRUCTION
E CITY, UTAH OF DEPARTMENT GODEWINGS FOR ROAL UTAH [STANDARD DIVERSION BOX
W/INTERCHANGEABLE
WALLS QUANTITIES
SCHEDULE STD DWG DB 2B



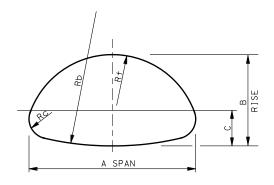




SECTION THRU FLUME BLADE

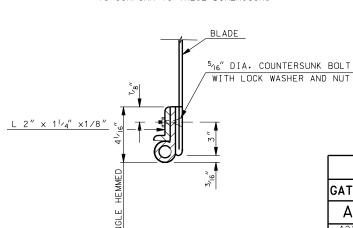


INSTALLATION SKETCH A



PIP	'E-ARC	H D	IME	NS I C	INS		
SPAN	RISE	LA,	YOUT DI	MENSION	۱S		
SPAN	RISE	С	Rc	R+	Rb		
36"	22"	61/4"	5″	181/4"	731/4"		

NOTE: PIPE-ARCH LAYOUT IN SHEET METAL FRAME TO CONFORM TO THESE DIMENSIONS.



PART SECT. THRU FLUME BLADE

NOTES:

- 1. USE STRUCTURAL CARBON FOR ALL BAR AND ANGLE STEEL CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36. HOT-DIP GALVANIZE AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M-111.
- 2. FABRICATE GUIDES, BLADES, AND SHEET METAL FRAMES OF HAND SLIDE GATES OF ZINC COATED STEEL CONFORMING TO THE REQUIREMENTS OF SPECIFICATION ASTM A 653.
- 3. "J" SEALS: MOLDED OR EXTRUDED NEOPRENE OR EPDM (ETHYLENE PROPYLENE) OF PROPER LENGTH, CURED TO ENSURE A DENSE HOMOGENEOUS CROSS SECTION FREE FROM PITTING, BLISTERS OR PORDSITY, MEETING THE FOLLOWING SPECIFICATIONS WHEN TESTED IN ACCORDANCE WITH APPLICABLE PROVISIONS OF ASTM D 412, D 471, D 2240 AND D 395.

SHORE A DUROMETER HARDNESS----- 60 ± 5

NEOPRENE EPDM

MINIMUM ELONGATION------450% 35% ULTIMATE TENSILE STRENGTH-----2.500 psi 2.000 psi COMPRESSION SET (MAX.)-----30% 25%

BOTH MATERIALS

ABSORPTION (2 DAYS)-------5% BY WEIGHT TENSILE STRENGTH (48 HOURS IN OXYGEN 8% OF BEGINNING STRENGTH @ 70°C AND 300 psi pressure.)
ACCURATELY LOCATE AND DRILL ALL HOLES IN SEAL WITH 1/8" OVERSIZE HOLLOW-CORE DRILL.

4. COMPRESSION SEALANT: 1½ INCH DIA., TOP GRADE BUTYL RUBBER OF DENSE, HIGHLY COMPRESSIBLE, STABLE MATERIAL WITH GOOD SAG AND ADHESION PROPERTIES PRODUCED FROM BLENDS OF REFINED HYDROCARBON RESINS AND PLASTICIZING COMPOUNDES, REINFORCED WITH INERT MINERAL FILLERS CONTAINING NO SOLVENTS, IRRITATING FUMES OR OBBOXIOUS ODDRS NOT DEPENDENT ON OXIDIZING, EVAPORATING OR CHEMICAL ACTION FOR ADHESIVE OR COHESIVE STRENGTH HAVING THE FOLLOWING PROPERTIES:

CHEMICAL COMPOSITION COMPONENTS

BITUMEN (HYDROCARBON PLASTIC CONTAIN) % BY WT.----50 INERT MINERAL FILLER % BY WT.-----30 VOLATILE MATTER % BY WT.-----D4,D140 D545 D6

REQUIRED

PHYSICAL PROPERTIES

SPECIFIC GRAVITY @ 77°F (25°C)1.20 TO 1.35	D7
DUCTILITY @ 77°F 25°C MIN5.0 c. m.	D113
SOFTENING POINT @ 77°F MIN 320°F	D36
FLASH POINT c.o.c. MIN600°F	D92
FIRE POINT c.o.c. MIN625°F	D92
PENETRATION	
77°F (25°C) 150 gs. 5 sec50 to 120	D217

REJECT IF ONE OR MORE TEST SPECIMENS.OF THE LOT REPRESENTING THE SPECIMENT, FAIL TO MEET ASTM REQUIREMENTS

- 5. BOTH FRAMES CAN BE USED WITH TYPE "G" HAND SLIDE GATES. SPECIFY WHETHER TYPE GO OR GD FRAME IS REQUIRED. SEE STD DWG DB 2C FOR FRAME TYPES. NORMALLY THE NUMBER OF GATES EQUAL THE NUMBER OF OPENINGS LESS ONE.
- 6. THE RUBBER SEAL FOR FLUSH BOTTOM CLOSURE: CONFORM TO ASTM D-2000.
- 7. MAKE FLUSH WITH FLOOR OF BOX TOP OF BAR SILL AFTER FRAME HAS BEEN PROPERLY PLUMBED AND LEVELED. GROUT FRAME IN PLACE WITH A CEMENT GROUT.

				IME	NS	ΙC	ON S	СНІ	EDI	ULE	Ξ			
GATE	SIZE			FLUN	1E					PIP	E OR	PIPE	ARCH	
	В	FRAN	νE	GUI	DE		BLAD	E	SHE	ET M	ETAL FR.	AME	BLA	DE
A	ט	D	h	С	GAGE	Ε	F	GAGE	Α	h	D	GAGE	F	GAGE
12"	12"	1'-41/4	1'-9	1'-61/2	16	2	1'-11/2	16	12"	1'-9	1'-41/4	16	1'-11/2	16
18"	18"	1'-101/4	2'-3	2'-01/2	14	3	1'-71/2	14	18"	2'-3	1'-101/4	14	1'-71/2	14
24"	24"	2'-41/4	2'-9	2'-61/4	10	4	2'-11/2	10	24"	2′-9	2'-41/4	10	2'-11/2	10
36"	24"	3'-51/4	2'-7	2'-41/2	10	4	3'-11/2	8	36"	2'-7	3'-51/4	10	3'-11/2	8

TION TRANSPORTAT DEPARTMENT

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UTAH

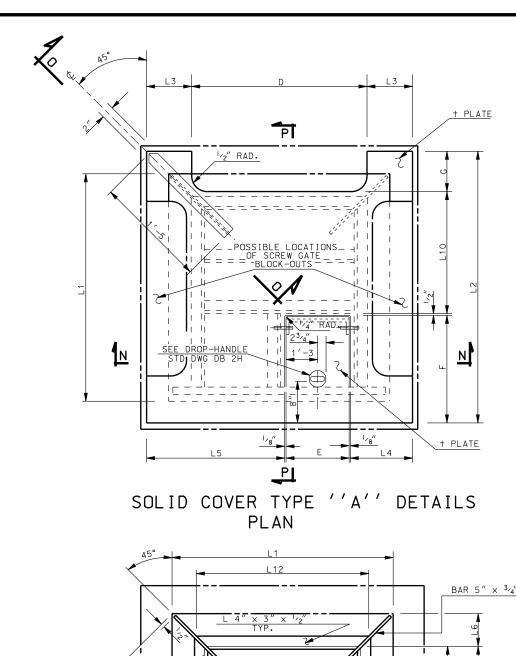
DIVERSION "YPE "G" IDE GATE FAILS STANDARD BOX T HAND SL SШ

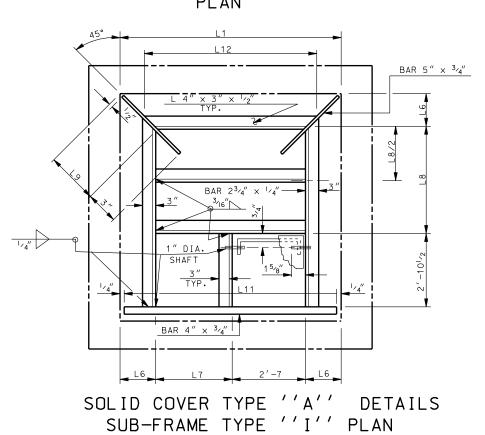
STD DWG

DB 2D

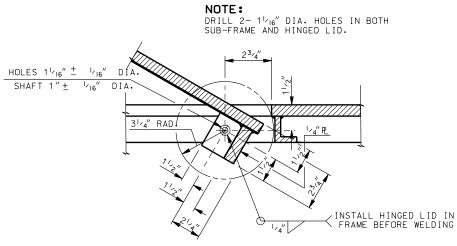
SEAL COMPRESSION SEALANT

> FLEXIBLE JOINT SEALANT TYP. CROSS-SECTION

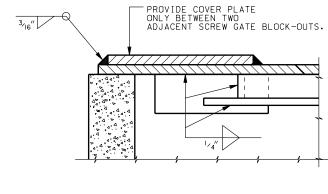




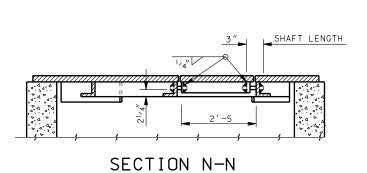
		SOL	. I D	COV	ER	TYI	PE "	Ά΄	' Sl	JB	-FF	RAM	E TY	PE	" I '	' DI	MEN	SION	۱S	
	SCREW	GATE	WALL SIZE	BLOCK-	-out	HII	NGED LI)		COV	/ER PL	.ATE				Ş	SUB-FR	AME TYPI	ΕΙ	
NO.	Α	В	L1	D	G	E	F	+	L2	+	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
1	36	36	4'-4	3'-51/4	81/2"	2'-6	3'-4 ⁵ /8	1/4"	5'-3	1/4"	10 ⁷ / ₈ "	1'-0	1'-8 ³ / ₄	61/2"	8"	93/4"	93/16"	$1'-1^{3}/_{8}$	4'-31/2	3'-3
2	42	42	4'-10	4'-01/2	91/2"			1/4"	5'-9	1/4"	101/4"	1'-1	2'-13/4	71/2"	1'-0	1'-23/4	10 ⁵ /8″	1'-6 ³ / ₈	4'-91/2	3'-7
3	48	48	5′-6	4'-71/2	91/2"			1/4"	6'-5	1/4"	$10^{3}/_{4}^{"}$	1'-1	$2'-9^{3}/_{4}$	71/2"	1'-8	1′-10 ³ ⁄4	10 ⁵ /8"	$2' - 2^{3}/_{8}$	5'-51/2	4'-3
4	36	24	4'-4	3'-51/4	81/2"			1/4"	5'-3	<u>*</u> 4	10 ⁷ / ₈ "	1'-0	1'-8 ³ / ₄	61/2"	8 "	93/4"	93/16"	1'-1 ³ / ₈	4'-31/2	3'-3
5	48	30	5'-4	4'-61/4	91/2"			1/4"	6'-3	1/4"	$10^{3}/8''$	1 ′ -1	$2' - 7^{3}/_{4}$	71/2"	1'-6	1′-8 ³ / ₄	10 ⁵ /8"	$2' - 0^{3}/_{8}$	5'-31/2	4'-1
6	60	36	6′-6	5'-71/4	91/2"			3/8"	7′-5	3/8"	107/8"	1'-1	$3'-9^{3}/4$	71/2"	2'-8	2'-103/4	10 ⁵ /8"	$3'-2^{3}/8$	6'-51/2	5'-3
7	72	42	7′-6	6'-71/4	91/2"			3/8"	8'-5	3/8"	10 ⁷ / ₈ "	1'-1	$4' - 9^{3}/_{4}$	71/2"	3′-8	$3'-10^{3}/_{4}$	10 ⁵ / ₈ "	$4'-2^{3}/8$	7'-51/2	6'-3
8	72	48	7′-6	6'-71/4	91/2"	2'-6	$3'-4^{5}/_{8}$	3/8"	8'-5	3/8"	107/8"	1'-1	4'-93/4	71/2"	3'-8	$3'-10^{3}/_{4}$	10 ⁵ /8"	$4'-2^{3}/8$	7'-51/2	6'-3

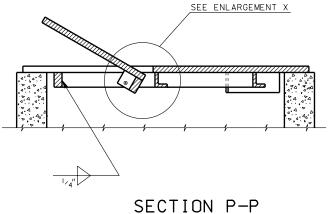


ENLARGEMENT X

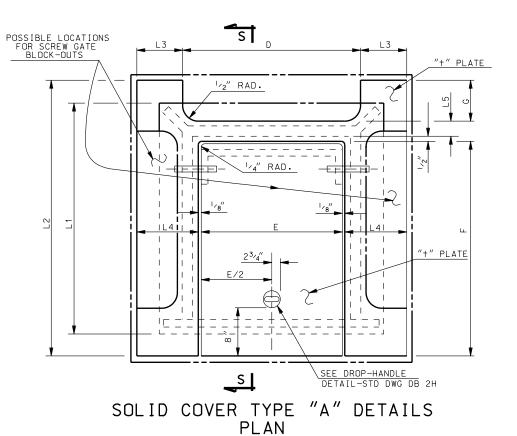


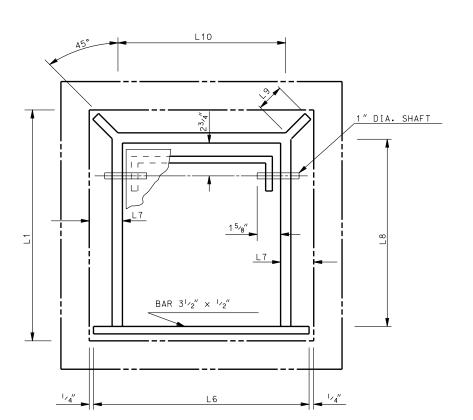
SECTION 0-0





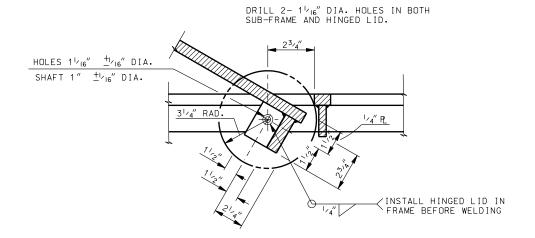
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah STANDARD DIVERSION BOX
HINGED LID
(SOLID COVER PLATE)
TYPE"A" DETAILS
TYPE I PLAN STD DWG DB 2E



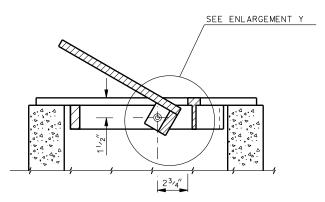


SOLID COVER TYPE "A" DETAILS SUB-FRAME TYPE II PLAN

S	OL I	D (COVI	ER T	YPE		΄Α΄΄	(SUB-	-F	RAN	ΛΕ T	ΥP	ΕΙΙ	D	IMEN	SIC	INS
L I NE	SCREW	GATE	WALL SIZE	BLOCK-	OUT	HIN	GED LID			COV	ER PL	ATE			SUB-	-FRAME	TYPE I	I
NU.	Α	В	L1	D	G	E	F	+	L2	+	L3	L4	L5	L6	L7	L8	L9	L10
1	18	18	2'-6	1'-101/4	81/2"	1'-81/4	2'-61/2	1/4"	3'-5	1/4"	93/8"	101/4"	11/2"	2'-51/2	43/4"	2'-01/2	41/4"	1'-111/2
2	24	24	3′-0	2'-41/4	81/2"	2'-21/4	0 0 2	1/4"	3'-11	1/4"	93/8"	10 ¹ / ₄ "	11/2"	2'-111/2	$4^{3}/_{4}^{"}$	2'-61/4	41/2"	2'-51/8
.3	30	30	3'-10	2'-111/4	81/2"	2'-6	3'-101/2	1//"	4'-9	1//"	107%	1'-13/0	11/2"	3'-91/2	77/0"	3'-41/1	41/2"	3'-31/8



ENLARGEMENT Y

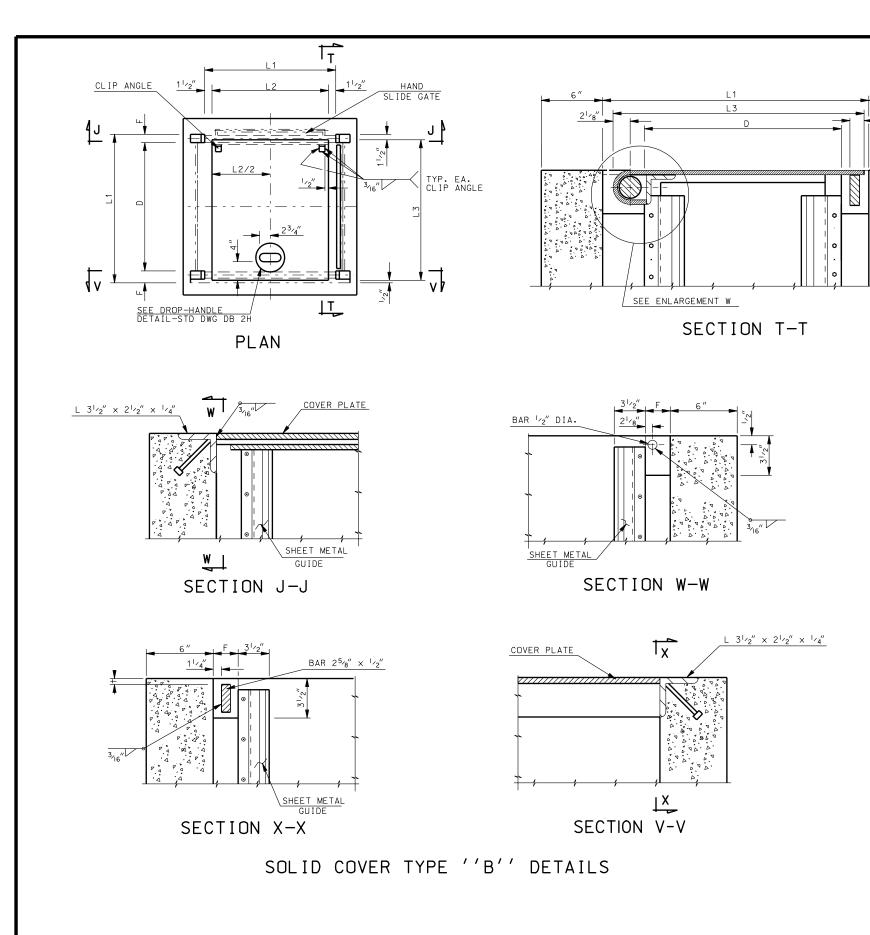


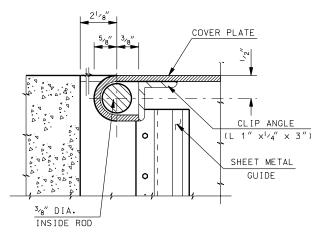
SECTION S-S

USE BAR 31/2"× 1/2" DIA.FOR ALL MEMBERS OF SUB-FRAME EXCEPT AS NOTED.

REVISIONS								'E APPR.
								NO. DATE
1011 4 H 00 00 14 4 0 H		ND BRIDGE CONSTRUCTION	TY, UTAH		JULY 03,2002	DATE	C005.80 Y IIII.	
10 ±14174±0*010 -1*±1-	NOTIFIED OF IKANSTOKION OF IKANSTOKIA IZON	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL		CHAIRMAN STANDARDS COMMITTEE		DEPUTY DIRECTOR
		SIANDARD DIVERSION BOX		<u>ა</u>	TYPF "A" DFTAII S	TVDE 11 DI AN	NHJL II JLI-	STANDARD DRAWING TITLE

DB 2F





ENLARGEMENT W

NOTES:

- 1. PREFORMED JOINT MATERIAL: AASHTO DESIGNATION M 213
- 2. ALL STRUCTURAL STEEL EITHER STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36 OR A RAISED PATTERN CARBON STEEL (U.S. STEEL S 300) OR USED IN SIDEWALK LOCATIONS ONLY.
- 3. HOT DIP GALVANIZE HINGED LID SOLID COVERS AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M 111 (ASTM A 123).
- 4. WHEN HINGED LID IS PLACED IN SIDEWALK LOCATIONS, PROVIDE A RUBBED FINISH FOR ALL BEARING SURFACES AT TOP OF WALL, AT THE DISCRETION OF THE ENGINEER, RECESS THE COVER PLATE THE THICKNESS OF THE COVER PLATE AND USE A CEMENT GROUT ON ALL BEARING SURFACES TO LEVEL THE HINGED LID.
- 5. DO NOT USE THIS DRAWING IN ROADWAY APPLICATIONS WHERE THE HINGED LID IS SUBJECTED TO A WHEEL LOAD.
- 6. AUTOMATICALLY END WELD THE 1/2" × 41/8" H4-L NELSON CONCRETE ANCHOR TO THE FILLET OF THE ANGLE. CENTER ANCHOR ABOUT FILLET.

DESIGN DATA

THE DESIGN IS IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

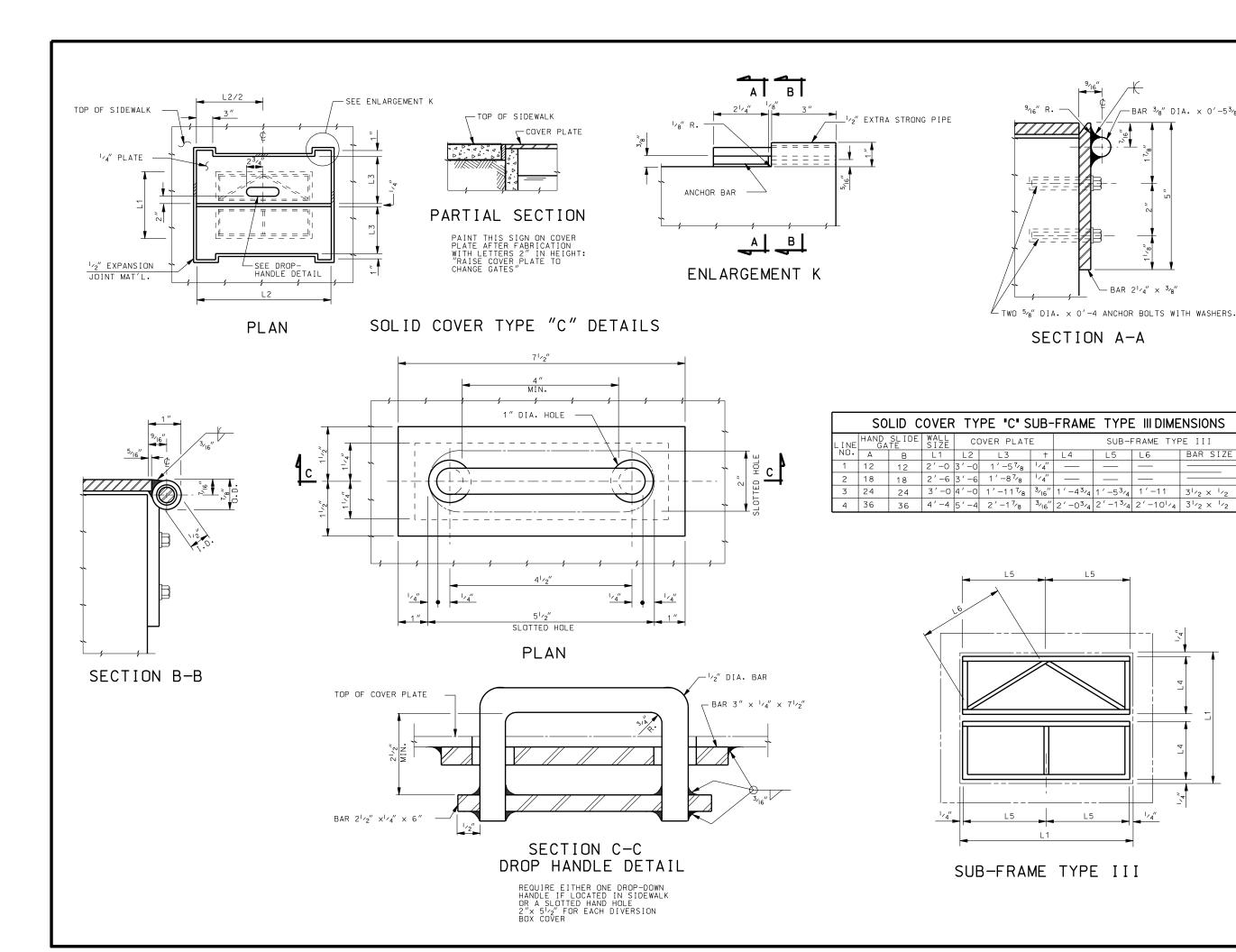
LOADING - COVER PLATES ARE DESIGNED FOR A LOAD OF 600 lbs/sq ft fs=20,000 psi

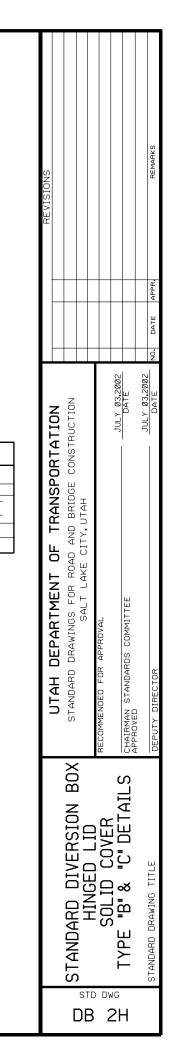
		SOLID	COVER	TYF	PE "B"	′ [IMEN	SIONS	S
	LINE NO.	HAND SL	IDE GATE	WALL SIZE	COV	ΞR	PLATE		
١	NU•	А	В	L1	D	F	L2	L3	+
ı	1	12	12	2'-0	1'-41/4	3 "	1'-9	1'-10	1/4"
I	2	18	18	2'-6	1'-101/4	3"	2'-3	2'-4	1/4"
	3	24	24	3'-0	2'-41/4	3 "	2'-9	2'-10	1/4"
Į	4	36	24	4'-4	3'-51/4	5"	4'-1	4'-2	1/4"

				REVISIONS
	NOTIFIED OF TRANSPORTION OF TRANSPORTED TO I			
	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION			
VOC 14010011110 0000110110	SALT LAKE CITY, UTAH			
NIERVIER DIVERSION BOX		_		
HINGED IID SOIID COVER RECOMMENDED FOR APPROVAL	RECOMMENDED FOR APPROVAL			
IYPE "B" DEIAILS	CHAIRMAN STANDARDS COMMITTEE DATE			
STANDARD DRAWING TITLE	DEBLITY NIDECTION ON TO THE PROPERTY OF THE PR	o _N	NO. DATE APPR.	PPR.

STD DWG

DB 2G

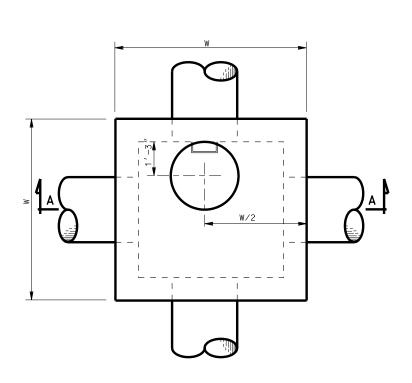




-BAR $\frac{3}{8}$ " DIA. \times 0'-5 $\frac{3}{8}$

SUB-FRAME TYPE III

1/4"



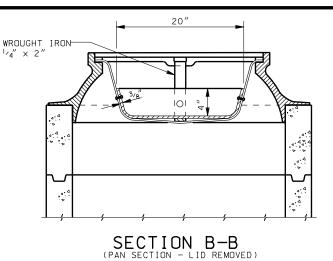
BOX PLAN

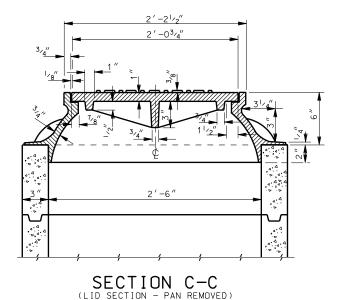
USE PRECAST CONCRETE GRADE RINGS

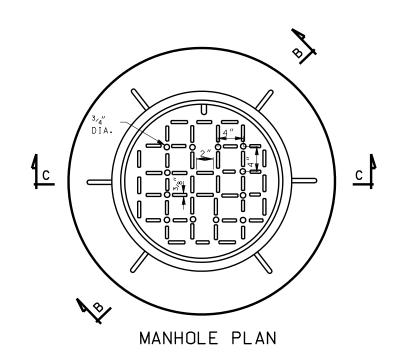
TO ACHIEVE FINISH GRADE ELEVATION.

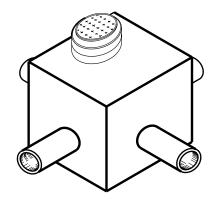
FURNISH PRECAST GRADE RINGS IN HEIGHTS OF 4 INCH, 6 INCH OR 8 INCHES TOTAL HEIGHT OF GRADE RINGS NOT TO EXCEED 1 FOOT.

SECTION A-A









ISOMETRIC VIEW

GENERAL NOTES FOR DB 3A TO DB 3C

- FOR ALL REINFORCING STEEL USE COATED DEFORMED BILLET-STEEL BARS CONFORMING TO AASHTO DESIGNATION M 284 OR M 111 AND M 31 GRADE 60.
- 2. FURNISH MANHOLE FRAME AND COVER IN EITHER DUCTILE IRON (ASTM A 536 GRADE 60) OR CAST GRAY IRON: AASHTO M 105, CLASS 30B.
- 3. CHAMFER EXPOSED CORNERS 3/4" EXCEPT WHERE NOTED OTHERWISE.
- 4. 2 INCHES COVER TO REINFORCING STEEL EXCEPT WHERE NOTED OTHERWISE.
- 5. USE CONCRETE CLASS AA(AE) FOR ALL CAST-IN-PLACE CONCRETE EXCEPT WHERE NOTED OTHERWISE.
- 6. USE TYPE II CEMENT (LOW ALKALI) UNLESS SPECIFIED OTHERWISE IN THE SPECIAL PROVISIONS.
- 7. SEE ROADWAY PLANS FOR DETAILS OF INSTALLATION, INCLUDING LOCATION OF UNITS, NUMBER OF UNITS REQUIRED, TYPE OF UNITS, LOCATION AND SIZE OF PIPE(S).
- 8. SEE STD DWG GF 6 FOR MANHOLE STEP DETAILS.

DESIGN DATA

MS 18 (HS 20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

STRUCTURAL CONCRETE: fc = 1400 psi, fs (REINF.) = 24,000 psi, n = 8

QUANTITIES

INDEX OF SHEETS

1- SITUATION AND LAYOUT 2- SCHEDULE OF INSTALLATION 0 " TO 42" RCP AND 0 " TO 54" CMP 3- SCHEDULE OF INSTALLATION 48" TO 72" RCP AND 60" TO 84" CMP

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt Lake City, Utah

STANDARD DIVERSION BOX WITH MANHOLE COVER SITUATION AND LAYOUT

STD DWG

DB 3A

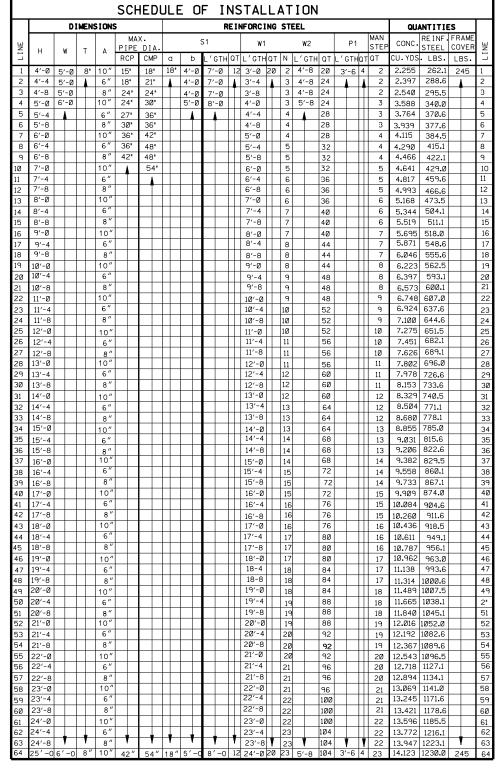
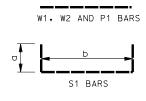
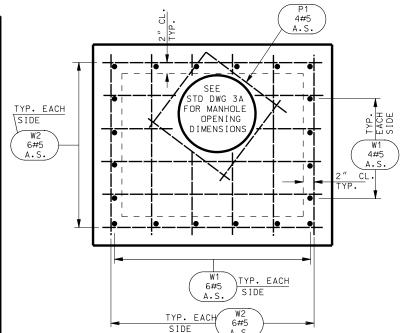
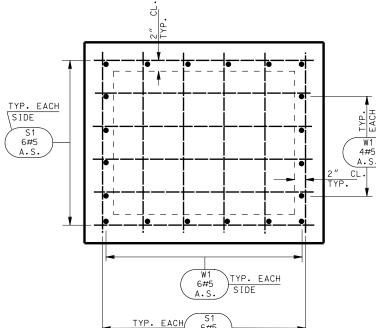


	TABLE	"A"	
R	CP	CMF	,
DIA.	CU. YDS.	DIA.	CU. YDS.
12"	0.037	12"	0.019
15"	0.053	15"	0.030
18"	0.071	18"	0.044
21"	0.095	21"	0.059
24"	0.121	24"	0.078
27"	0.151	30"	0.121
30"	0.184	36"	0.175
33"	0.221	42"	0.238
36"	0.261	48"	0.310
42"	0.350	54"	0.393

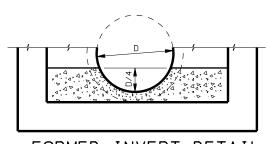




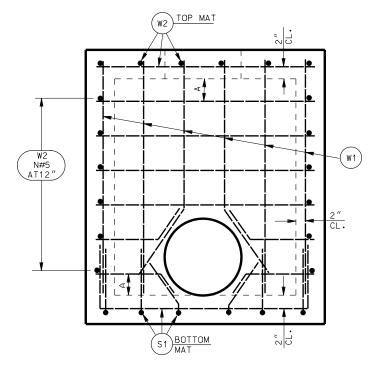
PLAN OF TOP SLAB



PLAN OF BOTTOM SLAB



FORMED INVERT DETAIL



TYPICAL WALL ELEVATION

NOTES:

- DEDUCT CONCRETE DISPLACED BY PIPE(S) FROM CONCRETE QUANTITIES SHOWN IN SCHEDULE OF INSTALLATION IN ACCORDANCE WITH TABLE "A".
- 2. FORM THE BOTTOM SLAB OF THE BOX TO FIT THE INVERT OF THE PIPE(S) WHEN SO REQUIRED ACCORDING TO THE DETAIL SHOWN ON THIS SHEET (FORMED INVERT)
- 3. QUANTITIES SHOWN IN THE SCHEDULE OF INSTALLATION ARE FOR ONE UNIT ONLY.
- 4. FIELD CUT OR BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPE(S) AND MAINTAIN 2" MINIMUM CLEARANCE.
- 5. UNLESS OTHERWISE SHOWN ALL DIMENSIONS ARE OUT-TO-OUT OF BARS.
- 6. WEIGHT QUANTITIES FOR MANHOLE FRAME AND COVER ARE SHOWN FOR INFORMATION ONLY.
- 7. SEE STD DWG DB 3A FOR DIMENSIONS. SEE STD DWG GF6 FOR MANHOLE STEP DETAILS.
- 8. PIPE DIAMETERS SHOWN IN TABLES AND SCHEDULES ARE INSIDE DIAMETERS.
- 9. ADD AN ADDITIONAL AMOUNT OF CONCRETE TO QUANTITIES SHOWN IN THE SCHEDULE OF INSTALLATION WHEN FORMED INVERT IS REQUIRED.
- 10. MAXIMUM PIPE DIMENSIONS SHOWN IN SCHEDULE OF INSTALLATION ARE FOR PIPES PERPENDICULAR TO WALLS OF BOX. DETERMINE CLEARANCES FOR SKEWED PIPES.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

STANDARD DIVERSION BOX WITH MANHOLE COVER UP TO 42" RCP AND UP TO 54" CMP

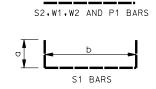
CHAIRMAN APPROVED

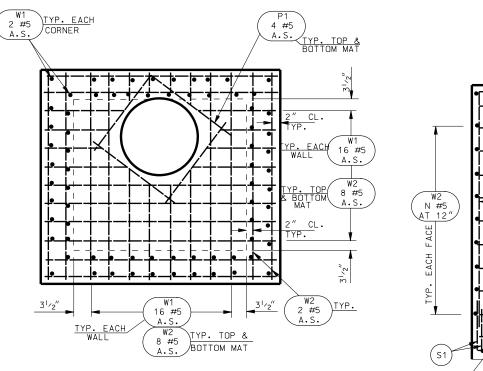
STD DWG

DB 3B

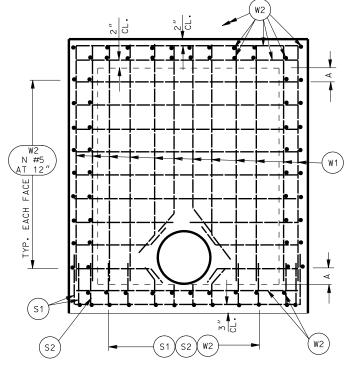
H		n 1																						г
		, U	MEN	SIONS						R	EINFO	DRC I	NG STE	EL	_			_			QUA	NTITIES		1
ш					MA			5	51		S	2	W1		l	W2			P1	MAN STEP	CONC.	REINF.	FRAME	
Z 	Н	W	Т.	Α	P I PE RCP	CMP	a	ь	LGT	н ГО.	LGT	I O T	LGTH	ΩТ	N	LGTH	ОТ	l G:	тнІп	Тат	CU.YDS	STEEL LBS.	COVER LBS.	
5	8′-0	9′-0	10"	8"	48"	60"	_	8′-8	_	_	-		7'-0	72	6	8'-8	_	3′.	_	+	11.234		245	6
6	8'-4	J -0	10	10"	54"	66"	2-0	0 -0	12	0 20	,	1 10	7'-4	12	6	0 -0	108	1	-0 0	5	11.570	1895.5	1	6
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	28′-8		1	6"	7	7	1	1	1	- ₹	1	1	27′-8	1	27	1	276	 ₹		26		4940.9	₹	12

	TABLE	"A"	
R	CP	CMP	
DIA.	CU.YDS.	DIA.	CU.YDS
48"	0.566	60"	0.606
54"	0.711	66"	0.733
60"	0.873	72"	0.873
66"	1.051	78"	1.024
72"	1.245	84"	1.188

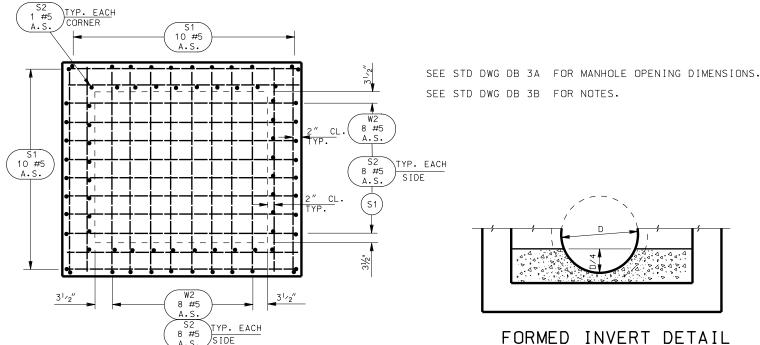




PLAN OF TOP SLAB

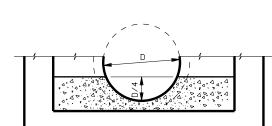


TYPICAL WALL ELEVATION



PLAN OF BOTTOM SLAB

(S1)



FORMED INVERT DETAIL

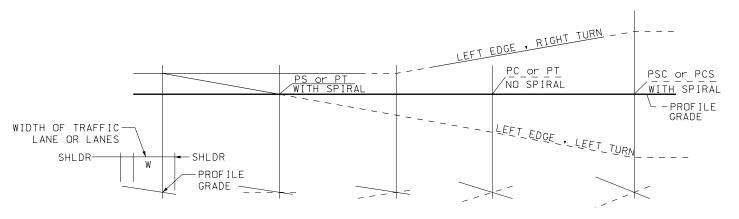
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah

JULY 03,2002 DATE

STANDARD DIVERSION BOX WITH MANHOLE COVER 48" TO 72" RCP AND 60" TO 84" CMP

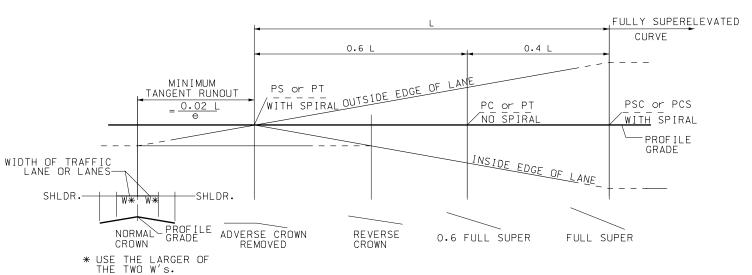
STD DWG

DB 3C



PROFILE - SINGLE CROWN ROAD

(FOR ONE-DIRECTION ROADWAY CROSS SECTION ONLY)



PROFILE - DOUBLE CROWN ROAD

LEGEND:

PS = POINT OF SPIRAL

PT = POINT OF TANGENCY

PC = POINT OF CURVATURE

PSC = POINT OF SPRIAL TO CURVE

PCS = POINT OF CURVE TO SPIRAL

e = SUPERELEVATION - %

W = CROSS SECTIONAL DISTANCE IN FEET FROM AXIS OF ROTATION (NORMALLY THE CONTROL LINE) TO THE OUTER EDGE OF THE TRAFFIC LANE OR LANES.

L = MINIMUM SUPERELEVATION RUNOFF LENGTH

NOTES

- 1. USE CURRENT EDITION OF AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS.
- 2. USE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS.
- 3. SPIRALS WITH CURVES ARE NOT REQUIRED BUT MAY BE DESIRABLE UNDER HIGH SPEEDS AND SHARP CURVES. WHEN A SPIRAL IS USED. THE LENGTH OF SPIRAL IS EQUAL TO MINIMUM SUPERELEVATION RUNOFF LENGTHS.
- 4. SUPERELEVATE SURFACED SHOULDERS AT SAME RATE AS TRAFFIC LANES.
- 5. PLACE THE FOLLOWING INFORMATION ON THE CONSTRUCTION PLANS.
 RATE OF SUPERELEVATION
 BEGIN AND END OF TANGENT RUNOUT
 BEGIN AND END OF SUPERELEVATION RUNOFF IF SPIRALS ARE NOT USED

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	RECOMMENDED FOR APPROVAL				
	JUNIS	JUN.26,2003			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		JUN.26,2003			
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STD. DWG. NO.

DD 1

PLAN PLAN VARIABLE SHOULDER VARIABLE SHOULDER TRAFFIC LANE → TRAFFIC LANE TRAFFIC LANE TRAFFIC LANE --CLIMBING LANE CLIMBING LANE 3/4 D VARIABLE VARIABLE MIN. SHOULDER-(SEE TABLE II) "L" TRANSITION LENGTH SHOULDER 300' MIN SHOULDER -POINT ON GRADE WHERE TRUCK SPEED IS REDUCED BY 10 MPH BELOW AVERAGE RUNNING SPEED (SEE NOTE 5) | L/2 TRANSITION LENGTH (SEE TABLE II) W4-2 SIGN (SEE TABLE II) └─ CREST GRADE LINE GRADE LINE _____AASHTO CRITICAL LENGTH OF GRADE **PROFILE** PROFILE

TABLE I

THE FOLLOWING THREE CRITERIA, REFLECTING ECONOMIC CONSIDERATIONS, SHOULD BE SATISFIED TO JUSTIFY A CLIMBING LANE:

- 1. UPGRADE TRAFFIC FLOW RATE IN EXCESS OF 200 VEHICLES PER HOUR
- 2. UPGRADE TRUCK FLOW RATE IN EXCESS OF 20 VEHICLES PER HOUR
- 3. ONE OF THE FOLLOWING CONDITIONS EXISTS:
 - A. A 10 MPH OR GREATER SPEED REDUCTION IS EXPECTED FOR A TYPICAL HEAVY TRUCK.
 - B. LEVEL OF SERVICE E or F EXISTS ON THE
 - C. A REDUCTION OF TWO OR MORE LEVELS OF SERVICE IS EXPERIENCED WHEN MOVING FROM THE APPROACH SEGMENT TO THE GRADE

	TABL	E II	
DESIGN SPEED MPH	L * FT	L/2 * FT	D FT
25	125	65	250
30	180	90	325
35	245	125	400
40	320	160	475
45	540	270	550
50	600	300	625
55	660	330	700
60	720	360	775
65	780	390	850
70	840	420	925

* BASED ON 12' TRAFFIC LANE WIDTH
"D" DISTANCE MAY PLACE W4-2 SIGN PRIOR TO CREST

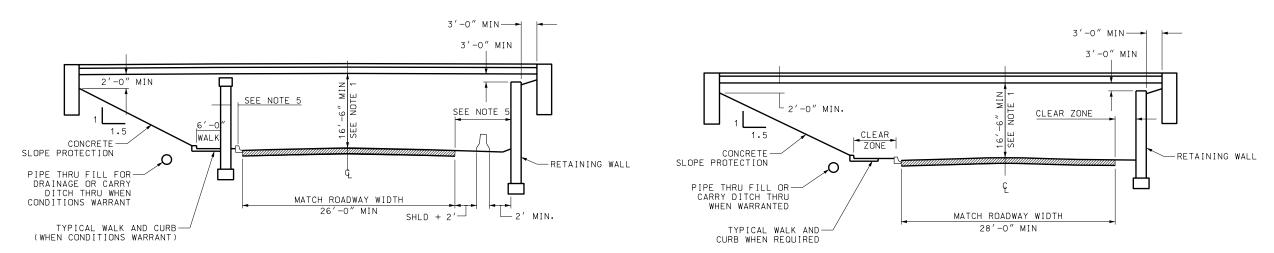
NOTES:

- I. USE THE CURRENT EDITION OF AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS.
- 2. USE THE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS.
- 3. CALCULATE CLEAR ZONE FROM SHOULDER LINE OF CLIMBING LANE.
- 4. USE CLIMBING LANE ON 2 LANE ROADWAY WHEN CRITERIA OF TABLE I IS MET.
- 5. EXTEND CLIMBING LANE A MINIMUM OF 300 FEET OVER CREST, PROVIDED MINIMUM PASSING SIGHT DISTANCE IS AVAILABLE. EXTEND THE CLIMBING LANE TO THE POINT WHERE MINIMUM PASSING SIGHT DISTANCE BECOMES AVAILABLE IF PASSING SIGHT DISTANCE IS RESTRICTED DUE TO HORIZONTAL OR VERTICAL ALIGNMENT, PROVIDED TRUCK SPEED IS LESS THAN 10 MPH BELOW AVERAGE RUNNING SPEED AT THAT POINT. OTHERWISE, EXTEND CLIMBING LANE TO THE POINT WHERE MINIMUM TRUCK SPEED IS EXCEEDED.
- USE CLIMBING LANE ON MULTI-LANE ROADWAY WHEN TRUCK SPEED IS REDUCED 10 MPH BELOW AVERAGE RUNNING SPEED AND, AFTER ASSIGNING ALL PASSENGER VEHICLES TO THE INNER LANE(S), THE VOLUME EXCEEDS THE DESIGN CAPACITY OF THE REMAINING LANE(S).
- 7. USE CONTINUOUS CLIMBING LANES WHEN TWO OR MORE CLIMBING LANE SECTIONS ARE JUSTIFIED IN CLOSE PROXIMITY, AND THE GAP BETWEEN THE SECTIONS WOULD BE LESS THAN 1/2 MILE IN LENGTH.
- 8. OMIT CLIMBING LANES OF LESS THAN 1000'.
- 9. PROVIDE A MINIMUM OF 1000' PASSING LANE FOR EACH 1 MILE SECTION WHERE THERE IS NO PASSING SIGHT DISTANCE AND DHY EXCEEDS 80.

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		JUN.26,2003			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		JUN.26,2003			
RAWING TITLE	DEPUTY DIRECTOR	_	NO. DATE APPR.	APPR.	REMARKS

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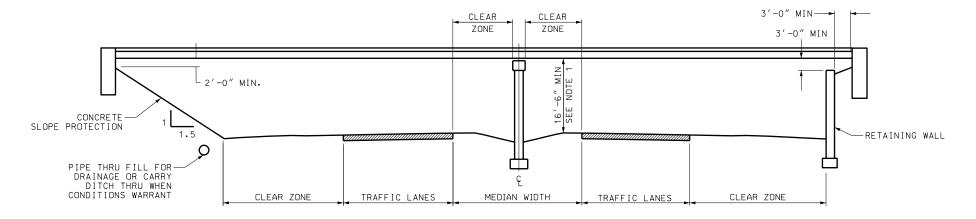


MINIMUM UNDERPASS CLEARANCE

(OTHER THAN FREEWAY OR MAJOR HIGHWAY)

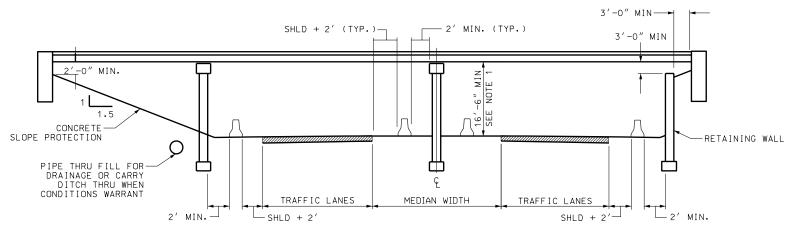
PREFERRED UNDERPASS CLEARANCE

(OTHER THAN FREEWAY OR MAJOR HIGHWAY)



PREFERRED UNDERPASS CLEARANCE

(FREEWAY OR MAJOR HIGHWAY)



MINIMUM UNDERPASS CLEARANCE

(FREEWAY OR MAJOR HIGHWAY

NOTES:

- 1. A RANGE OF 6 INCHES WILL BE ALLOWED ABOVE THE MIMIMUM CLEARANCE SHOWN EXCEPT WHEN OTHER GEOMETRIC CONSIDERATIONS GOVERN.
- 2. PROVIDE ADEQUATE PROTECTION FOR OBSTRUCTIONS WITHIN THE CLEAR ZONE.
- 3. PROVIDE A MINIMUM OF 17' 6" VERTICAL CLEARANCE FOR PEDESTRIAN OVERPASSES AND OVERHEAD SIGN STRUCTURES.
- 4. USE CURRENT EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS.
- 5. FOR
- 40 MPH AND UNDER

 USE 4'-0" MINIMUM WITH CURB

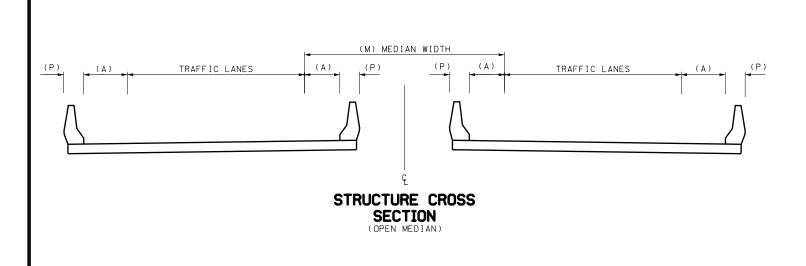
 USE 1/2 CLEAR ZONE WITHOUT CURB

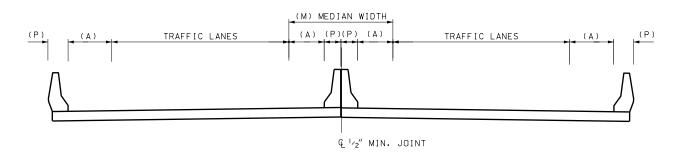
 45 MPH AND ABOVE

 USE CLEAR ZONE OR BARRIER

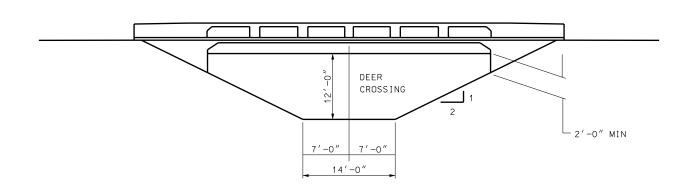
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DD 8





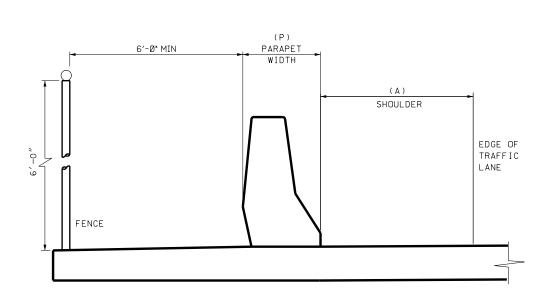
STRUCTURE CROSS SECTION (CLOSED MEDIAN)



DEER CROSSING NON VEHICULAR

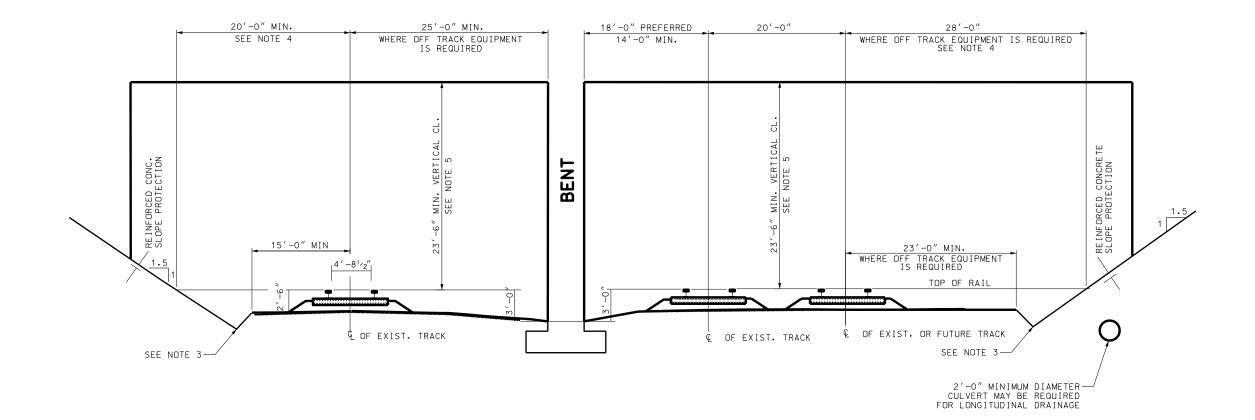
LEGEND

- (A) NORMAL SHOULDER PLUS 2'-0" FOR BARRIER OFFSET ON ALL ROADS AND RAMPS.
 - FOR TWO WAY SINGLE STRUCTURE MATCH ROADWAY WIDTH PLUS 2'-0" BARRIER OFFSET EACH SIDE.
- (M) WHEN MEDIAN WIDTH IS LESS THAN 30'-0" USE CLOSED MEDIAN STRUCTURE.
- (P) PARAPET DIMENSION CONTROLLED BY SPECIFIC DESIGN.



SIDEWALK GEOMETRIC

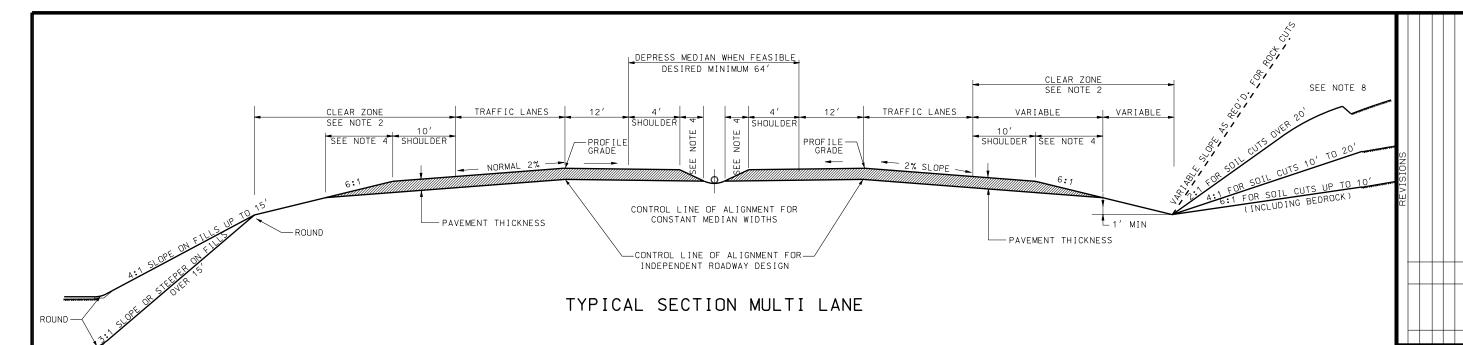
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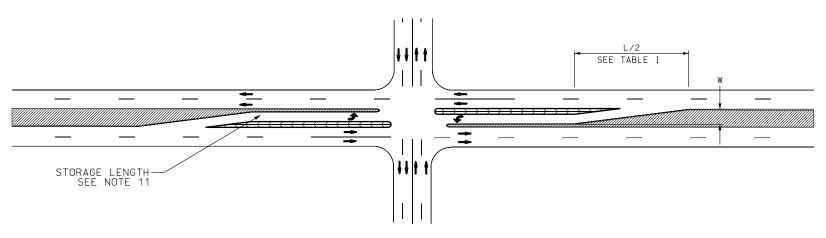


NOTES:

- 1. THE DIMENSIONS SHOWN CONTROL THE TOE OF THE SLOPES.
- 2. HORIZONTAL CLEARANCES SHOWN ARE NORMAL TO THE CENTERLINE OF THE TRACK. USE REDUCED CLEARANCES WHEN REQUIRED BY SPECIAL CONDITIONS AND WITH APPROVAL OF THE RAILROAD INVOLVED.
- 3. DETERMINE THE SIZE OF THE CUT DITCH BY A HYDRAULIC ANALYSIS.
- 4. INCREASE DISTANCE AT INDIVIDUAL STRUCTURE LOCATIONS AS APPROPRIATE TO PROVIDE FOR UNUSUAL DRAINAGE, OR SNOW STORAGE.
 - a. PIPE THE CUT DITCH OR INCREASE THE DISTANCE TO ACCOMMODATE A LARGER CHANNEL IF JUSTIFIED BY HYDRAULIC ANALYSIS.
 - b. INCREASE THIS DISTANCE TO PROVIDE SPACE FOR HEAVY OR DRIFTING SNOW IF JUSTIFIED BY THE RAILROAD.
- 5. A RANGE OF 6" WILL BE ALLOWED ABOVE THE MINIMUM VERTICAL CLEARANCE SHOWN EXCEPT WHEN OTHER GEOMETRIC CONSIDERATIONS GOVERN.

STD DWG





TYPICAL MEDIAN LEFT TURN LANE

FOR MEDIANS GREATER THAN 28

NOTES:

- 1. USE THE CURRENT EDITION OF AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS.
- 2. USE THE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS. CLEAR ZONE MAY INCLUDE CUT OR FILL SLOPES.
- 3. STANDARDS SHOWN ARE RECOMMENDED VALUES. EXCEED STANDARDS IF CONDITIONS PERMIT.
- 4. MAINTAIN A CONSTANT WIDTH TO THE NEAREST 1/2 FOOT EVEN UNDER CONDITIONS OF MAXIMUM SUPERELEVATION PROVIDING A SLOPE OF 6:1 OR FLATTER IN A NORMAL SECTION WITH A 2 PERCENT SLOPE.
- 5. PROVIDE BACKSLOPE ROUNDING FOR ALL CUTS STEEPER THAN 4:1 AS PER ROUNDING DETAIL, STD DWG DD-2.
- 6. TRANSITION FROM FLAT TO STEEPER CUT AND FILL SLOPES IN SUFFICIENT DISTANCE TO PROVIDE A NATURAL PLEASING APPEARANCE.
- 7. PAVEMENT THICKNESS CONSISTS OF UTBC AND HARD SURFACING ONLY.
- 8. INSTALL SURFACE DITCH WHEN SURFACE DRAINAGE IS TOWARDS CUT. SURFACE DITCH MUST DRAIN TO NATURAL DRAINAGE OR TO ROADSIDE DITCH.
- 9. SEE STD DWG DD-4 FOR TYPICAL DETAILS FOR SECTION ON CURVE AND SECTION ON TANGENT, SEE STD DWG DD-2 FOR TYPICAL SECTION ON DITCH FLARING AND BENCHED SLOPE.
- 10. USE FLAT MEDIAN WHERE MEDIAN IS NOT OF SUFFICIENT WIDTH TO PROVIDE A DEPTH OF 1 FOOT BELOW THE PAVEMENT THICKNESS. REDUCE SLOPE TO 10:1 OR LESS AND PAVE THE ENTIRE AREA.
- 11. USE A CAPACITY ANALYSIS TO DETERMINE THE LENGTH OF STORAGE REQUIRED FOR TURN LANE.
 A MINIMUM LENGTH OF 100 FEET IS REQUIRED.

RURAL LTI LANE HIGHWAYS

TRANSPORTATION
AND BRIDGE CONSTRUCTION
TY, UTAH

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DEPARTMENT

UTAH

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FREEWAYS

THAN

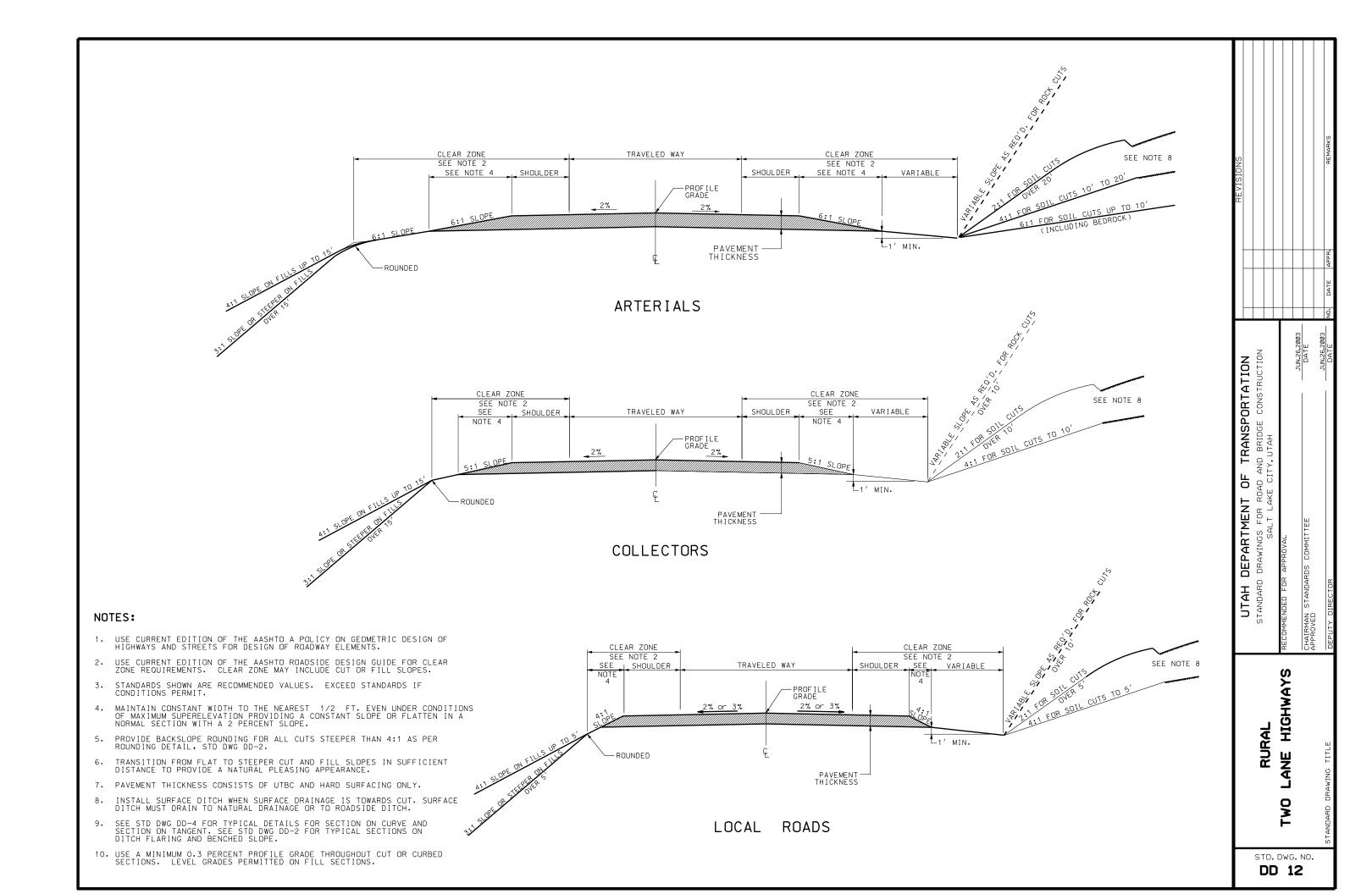
OTHER

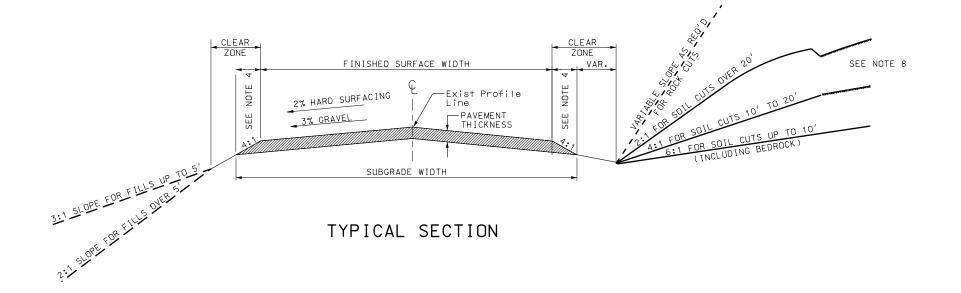
DD 11

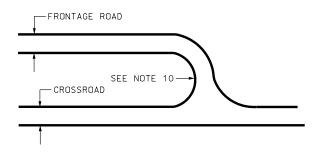
TABLE I	
SPEED	FORMULA
FOR SPEEDS OF 40 MPH AND LESS	$L = \frac{\text{WS}^2}{60}$
FOR SPEEDS OF 45 MPH AND GREATER	L= WS

WHERE.

- L = TAPER LENGTH IN FEET
- W = WIDTH OF OFFSET IN FEET
- S = SPEED IN MPH







INTERSECTION OF FRONTAGE ROAD AND CROSSROAD

NOTES:

- 1. USE THE CURRENT EDITION OF AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS.
- 2. USE THE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS. CLEAR ZONE MAY INCLUDE CUT AND FILL SLOPES.
- 3. STANDARDS SHOWN ARE RECOMMENED VALUES. EXCEED STANDARDS IF CONDITIONS PERMIT.
- 4. MAINTAIN A CONSTANT WIDTH TO THE NEAREST 1/2 FOOT EVEN UNDER CONDITIONS OF SUPERELEVATION PROVIDING A SLOPE OF 4:1 OR FLATTER IN A NORMAL SECTION WITH A 2 PERCENT OR 3 PERCENT SLOPE.
- 5. PROVIDE BACKSLOPE ROUNDING FOR ALL CUTS STEEPER THAN 4:1 AS PER ROUNDING DETAIL, STD DWG DD-2.
- FIGURE 10 STEEPER CUT AND FILL SLOPES IN SUFFICIENT DISTANCE TO PROVIDE A NATURAL PLEASING APPEARANCE.
- PAVEMENT THICKNESS CONSISTS OF GRAVEL OR UTBC AND HARD SURFACING ONLY.
- 8. INSTALL SURFACE DITCH WHEN SURFACE DRAINAGE IS TOWARDS CUT. SURFACE DITCH MUST DRAIN TO NATURAL DRAINAGE OR TO ROADSIDE DITCH.
- 9. SEE STD DWG DD-4 FOR TYPICAL DETAILS FOR SECTION ON CURVE AND SECTION ON TANGENT, SEE STD DWG DD-2 FOR TYPICAL SECTION ON DITCH FLARING AND BENCHED SLOPE.
- 10. DESIGN FRONTAGE ROAD WITH A MINIMUM TURNING RADIUS OF 60 FEET AT INTERSECTIONS. A TURNING RADIUS OF 50 FEET MAY BE USED WHERE NO REGULAR LARGE VEHICLE MOVEMENTS ARE EXPECTED.

					REVISIONS
	LIAH DEPAKIMENI OF IKANSPOKIAIION				
	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION				
	SALT LAKE CITY, UTAH				
ND ACCESS		7			
	RECOMMENDED FOR APPROVAL				
FR 50 ADT)	JUN.26,2003	ص ص			
	CHAIRMAN STANDARDS COMMITTEE DATE				
		~			
Э-	DEPLITY DIRECTOR DATE	ģ	DATE	APPR.	REMARKS

FRONTAGE AND ACCE ROADS (UNDER 50 AC

STD. DWG. NO.

DD 13

CORRUGATED STEEL PIPE ARCHES 2 2/3" × 1/2" CORRUGATIONS PIPE DIM. SPAN X RISE CORNER RADIUS inch MIN. COVER ft. MIN. THICKNESS inch MAX.FILI HEIGHT ft. inch 17 × 13 0.064 11 21 x 15 18 0.064 24 × 18 24 0.064 28 × 20 24 0.064 35×24 4 30 0.064 42 × 29 41/2 30 0.064 51/2 49 x 33 30 0.079 57 × 38 61/2 30 6 0.109 30 64 × 43 0.109 71 × 47 24 5 8 0.138

24

24

0.168

81/2

83	3	×	5	7
SEE	Ν	101	E	1

77 × 52

CORRUGATED STEEL PIPE ARCHES 6" x 2" CORRUGATIONS BOLTED FABRICATION 4 BOLTS/FT 3/4" DIA.

PIPE DIM. SPAN X RISE ft-inch	CORNER RADIUS inch	MIN. COVER ft.	MIN. THICKNESS inch	MAX.FILL HEIGHT ft.
6-1 × 4-7	18	18	0.109	16
7-0 × 5-1	18	18	0.109	14
7-11 × 5-7	18	18	0.109	12
8-10 × 6-1	18	24	0.109	11
9-9 × 6-7	18	24	0.109	10
10-11 × 7-1	18	24	0.109	8
11-10 × 7-7	18	24	0.109	7
12-10 × 7-7	18	24	0.109	6
14-1 × 8-4	18	30	0.109	5
15-4 x 9-3	21	24	0.138	6
15-10 × 9-10	21	24	0.138	5
16-7 × 10-9	21	24	0.138	4
13-3 × 9-4	31	24	0.109	12
14-3 × 9-10	31	24	0.109	11
15-4 × 10-4	31	24	0.138	10
16-3 × 10-10	31	24	0.138	9
17-2 × 11-4	31	30	0.138	9
18-1 × 11-10	31	30	0.168	8
19-3 × 12-4	31	30	0.168	7
19-11 × 12-10	31	30	0.168	7
20-7 × 13-10	31	36	0.188	7

5

			2 2/3	″ × ¹	∕2″ COF	RRUGA	TIONS	•••	_	
THICKNESS	0.0	064	0.0	179	0.1	09	0.1	38	0.1	68
PIPE DIAMETER inch	MIN, COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.
12	12	213	12	266	12	372	12	479	12	586
15	12	170	12	212	12	298	12	383	12	469
18	12	142	12	177	12	248	12	319	12	391
21	12	121	12	152	12	213	12	274	12	335
24	12	106	12	133	12	186	12	239	12	293
27	12	94	12	118	12	165	12	213	12	260
30	12	85	12	106	12	149	12	191	12	234
36	12	71	12	88	12	124	12	159	12	195
42	12	60	12	76	12	106	12	137	12	167
48	12	53	12	66	12	93	12	119	12	146
54			12	59	12	82	12	106	12	130
60					12	74	12	95	12	117
66							13	87	12	106
72							14	79	13	97
78									14	86
84									15	75

ROUND CORRUGATED STEEL PIPE

SEE NOTE 1

ROUND CORRUGATED STEEL PIPE 34" x 1" SPIRAL RIB PIPE

THICKNESS	0.0)64	0.0	79	0.10)9
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.
24	12	56	12	70	12	99
30	12	45	12	56	12	79
36	12	37	12	47	12	66
42	12	32	12	40	12	56
48	12	28	12	35	12	49
54		25	15	31	15	44
60		22	15	28	15	39
66			18	25	18	36
72			18	23	18	33
78					21	30
84					21	28

CORRUGATED STEEL PIPE ARCHES 3" × 1" OR 5" × 1" CORRUGATIONS

PIPE DIM. SPAN X RISE inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX.FILL HEIGHT ft.
53 × 41	7	24	0.109	7
60 × 46	8	24	0.109	7
66 × 51	9	18	0.109	9
73 × 55	12	18	0.109	10
81 × 59	14	18	0.109	11
87 × 63	14	18	0.109	10
95 × 67	16	18	0.109	11
103 × 71	16	24	0.109	10
112 × 75	18	24	0.109	10
117 × 79	18	24	0.109	10
128 × 83	18	24	0.138	8
137 × 87	18	24	0.138	7
142 × 91	18	24	0.168	7
			•	

SEE NOTE 1

ROUND CORRUGATED STEEL PIPE 3" x 1" CORRUGATIONS

THICKNESS	0.0	064	0.0	79	0.1	09	0.1	38	0.1	68
PIPE DIAMETER inch	MIN, COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.
36	12	81	12	102	12	143	12	184	12	225
42	12	70	12	87	12	122	12	157	12	193
48	12	61	12	76	12	107	12	138	12	159
54	12	54	12	68	12	95	12	122	12	150
60	12	49	12	61	12	85	12	110	12	135
66	13	44	12	55	12	78	12	100	12	122
72	15	40	13	51	12	71	12	92	12	112
78	16	37	14	47	12	66	12	85	12	104
84	17	35	15	43	13	61	12	78	12	96
90	18	32	16	40	14	57	12	73	12	90
96			17	38	15	53	13	69	12	84
102			18	36	15	50	14	65	13	79
108					16	47	14	61	14	75
114					17	45	15	58	15	71
120					18	42	16	55	15	67
126							17	52	16	64
132							17	50	17	61
138							18	48	18	58
144									18	56

SEE NOTE 1

ROUND CORRUGATED STEEL PIPE 5" x 1" CORRUGATIONS

THICKNESS	0.0	064	0.0	79	0.109		0.1	38	0.168	
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX FILL ft.
36	12	72	12	90	12	127	12	163	12	200
42	12	62	12	77	12	109	12	140	12	171
48	12	54	12	68	12	95	12	122	12	150
54	12	48	12	60	12	84	12	109	12	133
60	12	43	12	54	12	76	12	98	12	120
66	13	39	12	49	12	69	12	89	12	109
72	14	36	13	45	12	63	12	81	12	100
78	16	33	14	41	12	58	12	75	12	92
84	17	31	15	38	13	54	12	70	12	85
90	18	29	16	36	14	50	12	65	12	80
96			17	34	15	47	13	61	12	75
102			18	32	15	44	14	57	13	70
108					16	42	14	54	14	66
114					17	40	15	51	15	63
120					18	38	16	49	15	60
126							17	46	16	57
132							17	44	17	54
138							18	42	18	52
144									18	50

NOTE 1: TABLE IS FOR PIPE WITH HELICAL LOCK SEAMS OR HELICAL WELDED SEAMS ONLY.

ROUND CORRUGATED STEEL STRUCTURAL PLATE PIPE 6" × 2" CORRUGATIONS BOLTED FABRICATION 4 BOLTS/FT 3/4" DIA.THICKNESS

THICKNESS 0.109 0.138 0.168 0.186 0.218 0.249 0.280

PIPE INTO INTO	THIC	KNESS	0.109	0.138	0.168	0.186	0.218	0.249	0.280
66 12 42 62 81 93 113 133 145 72 12 38 57 75 86 103 122 135 78 12 35 52 69 79 95 112 123 84 12 33 49 64 73 88 104 114 90 12 31 45 60 68 82 97 106 96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 1108 14 25 38 50 57 69 81 88 1108 14 25 38 50 57 69 81 88 1108	DIAMETER		FILL	FILL	FILL	FILL	FILL	FILL	FILL
72 12 38 57 75 86 103 122 135 78 12 35 52 69 79 95 112 123 84 12 33 49 64 73 88 104 114 90 12 31 45 60 68 82 97 106 96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 1108 14 25 38 50 57 69 81 88 1108 14 25 38 50 57 69 81 88 1102 15 23 34 45 51 62 73 80 120	60	12	46	68	90	103	124	146	160
78 12 35 52 69 79 95 112 123 84 12 33 49 64 73 88 104 114 90 12 31 45 60 68 82 97 106 96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138	66	12	42	62	81	93	113	133	145
84 12 33 49 64 73 88 104 114 90 12 31 45 60 68 82 97 106 96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 1	72	12	38	57	75	86	103	122	135
90 12 31 45 60 68 82 97 106 96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19	78	12	35	52	69	79	95	112	123
96 12 29 43 56 64 77 91 100 102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 150 29	84	12	33	49	64	73	88	104	114
102 13 27 40 52 60 73 86 94 108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 150 19 18 27 36 41 49 58 64 150 21	90	12	31	45	60	68	82	97	106
108 14 25 38 50 57 69 81 88 114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 150 19 18 27 36 41 49 58 64 156 20	96	12	29	43	56	64	77	91	100
1114 15 24 36 47 54 65 77 84 120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 156 20 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 2	102	13	27	40	52	60	73	86	94
120 15 23 34 45 51 62 73 80 126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23	108	14	25	38	50	57	69	81	88
126 16 22 32 42 49 59 69 76 132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 180 24	114	15	24	36	47	54	65	77	84
132 17 21 31 40 46 56 66 72 138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24	120	15	23	34	45	51	62	73	80
138 18 20 29 39 44 54 63 69 144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20	126	16	22	32	42	49	59	69	76
144 18 19 28 37 43 51 61 66 150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26	132	17	21	31	40	46	56	66	72
150 19 18 27 36 41 49 58 64 156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29	138	18	20	29		44	54	63	69
156 20 17 26 34 39 47 56 61 162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41	144	18	19	28	37	43	51	61	66
162 21 17 25 33 38 46 54 59 168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43		19			36				64
168 21 16 24 32 36 44 52 57 174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30	156	20	17	26	34	39	47	56	61
174 22 16 23 31 35 42 50 55 180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 25 31 38 41 240 30 25 31 37	162	21	17	25	33	38	46	54	59
180 23 15 22 30 34 41 48 53 186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39	168						- ' '		
186 24 15 22 29 33 40 47 51 192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34	174	22	16	23	31	35	42	50	55
192 24 21 28 32 38 45 50 198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34									
198 25 20 27 31 37 44 48 204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34			15						
204 26 20 26 30 36 43 47 210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 288 36 31 33 288 36 31 33									
210 27 19 25 29 35 42 45 216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 34 289 36 32									
216 27 25 28 34 41 44 222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32									
222 28 24 27 33 40 43 228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32				19					
228 29 23 27 32 39 42 234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 34 300 38 32 32									
234 30 23 26 31 38 41 240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32									
240 30 25 31 37 40 246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32									
246 31 25 30 36 39 252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32					23				
252 32 29 35 38 258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32									
258 33 28 34 37 264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32						25			
264 33 28 34 36 270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 300 38 32									
270 34 27 33 35 276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 32 300 38 32 32									
276 35 32 34 282 36 32 34 288 36 31 33 294 37 32 32 300 38 32 32			<u> </u>	-				-	
282 36 288 36 294 37 300 38			<u> </u>				21		
288 36 294 37 300 38			<u> </u>	-			<u> </u>		
294 37 300 38 32 32									
300 38 32			-				-	31	
			-						
			-				-		
	306	วร	<u> </u>		<u> </u>		<u> </u>		31

STRUCTURAL STEEL UNDERPASS 6" × 2" CORRUGATIONS									
PIPE DIM. SPAN X RISE ft-inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX.FILL HEIGHT ft.					
12-2 x 11-0	38	24	0.111	11					
13-2 x 11-11	38	24	0.111	10					
14-1 × 12-10	38	24	0.111	10					
14-10x 13-5	38	24	0.111	10					
15-9 × 15-1	38	24	0.111	7					
16-5 × 16-1	38	24	0.140	7					
17-3 × 17-0	47	36	0.140	9					
19-2 × 17-2	47	36	0.170	7					
20-4 x 17-9	47	36	0.188	6					

STD DWG

DG 1

CORRUGATED ALUMINUM PIPE ARCHES 9 in x 2½ in CORRUGATIONS BOLTED FABRICATION								
PIPE DIM. AN x RISE ft-inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX FI HEIGH ft.				

9 in x 21/2 in CORRUGATIONS BOLTED FABRICATION									
PIPE DIM. SPAN x RISE ft-inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX FILL HEIGHT ft.					
5-11× 5-5	31.8	13	0.100	24					
6-6 × 5-9	31.8	14	0.100	22					
7-3 × 6-0	31.8	15	0.100	20					
7-11× 6-4	31.8	17	0.100	18					
8-7 × 6-7	31.8	18	0.100	17					
9-3 × 6-10	31.8	19	0.100	15					
10-1 × 7-1	31.8	21	0.100	14					
10-8 × 7-5	31.8	22	0.100	13					
11-6 × 7-8	31.8	24	0.100	12					
$12-1 \times 7-11$	31.8	22	0.125	14					
12-10x 8-3	31.8	24	0.150	13					
$13-7 \times 8-6$	31.8	23	0.150	12					
13-11x 9-5	31.8	24	0.150	12					
$14-8 \times 9-8$	31.8	23	0.175	11					
15-4 ×10-0	31.8	24	0.175	10					
16-1 ×10-4	31.8	24	0.200	10					
16-9 ×10-8	31.8	26	0.200	9					
17-3 ×11-0	31.8	27	0.225	9					
18-0 ×11-4	31.8	27	0.225	9					
10_0 \(\tau \)11_0	31 0	20	0.250	0					

	ROUND CORRUGATED ALUMINUM PIPE 3 in x 1 in CORRUGATIONS										
THICKNESS	0.0	60	0.0	75	0.1	05	0.13	55	0.164		
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	
36	12	59	12	74	12	101	12	133	12	163	
42	12	50	12	63	12	89	12	114	12	140	
48	12	44	12	55	12	78	12	100	12	122	
54	14	39	14	49	14	69	12	89	12	109	
60	15	35	15	44	15	62	14	80	12	98	
66	17	32	17	40	17	56	15	73	13	89	
72	18	29	18	37	18	52	16	66	15	81	
78			20	34	20	43	18	61	16	75	
84					21	42	19	57	17	70	
90					23	41	20	53	18	65	
96					24	38	22	49	19	60	
102							23	44	21	54	
108							24	40	22	49	
114									23	44	
120									24	40	

USE 5 1/3 BOLTS/FOOT- 3/4" DIA STEEL OR ALUMINUM

ROUND	CC	DRF	RUC	SATE	ED	ALUM	INUM	PIPE
6	in	×	1	in	CC	DRRUG	ATIO	NS

	6 in x 1 in CORRUGATIONS									
THICKNESS	0.06	0	0.07	5	0.10)5	0.1	35	0.164	
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN, COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.
30	12	62	12	77	12	108	12	139	12	170
36	12	51	12	64	12	90	12	116	12	142
42	12	44	12	55	12	77	12	99	12	121
48	12	38	12	48	12	67	12	87	12	106
54	14	34	14	43	14	60	13	77	12	94
60	15	31	15	38	15	54	14	69	13	85
66	17	28	17	35	17	49	15	63	14	77
72	18	25	18	32	18	45	17	58	15	71
78			20	29	20	41	18	53	16	65
84					21	38	19	49	17	60
90							21	46	19	56
96							22	43	20	53
102							23	40	21	49
108									22	44
114									24	40

SEE NOTE 1

CORRUGATED ALUMINUM PIPE ARCHES 2 2/3 in x 1/2" in CORRUGATIONS										
PIPE DIM. SPAN x RISE inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX FILL HEIGHT ft.						
17 × 13	3		0.060	11						
21 × 15	3	18	0.060	9						
24 × 18	3	24	0.060	7						
28 × 20	3	24	0.060	5						
35 × 24	4	30	0.060	6						
42 x 29	41/2	30	0.060	5						
49 × 33	51/2	30	0.075	5						
57 × 38	61/2	30	0.135	6						
64 × 43	7	30	0.135	5						
71 × 47	8	24	0.164	5						

	01 / 15	'	50	0.133	,	FOR 0.105 THRU 0.164 in
	71 × 47	8	24	0.164	5	USE 1∕2 in DIA BOLTS
•	SEE NOTE 1		•			SEE NOTE 1

	CORRUGATE		
0.000	0.075	0 105	0.135

THICKNESS	0.06	0	0.0	75	0.10)5	0.13	35	0.16	4
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX FILL ft.
12	12	155	12	193	12	271	12	348	12	426
15	12	124	12	154	12	216	12	279	12	340
18	12	103	12	129	12	180	12	232	12	284
21	12	88	12	110	12	154	12	199	12	243
24	12	77	12	96	12	135	12	174	12	213
27	12	68	12	86	12	120	12	155	12	189
30	12	62	12	77	12	108	12	139	12	170
36	12	51	12	64	12	90	12	116	12	142
42	12	44	12	55	12	77	12	99	12	121
48					12	66	12	86	12	106
54					14	54	14	70	14	87
60							15	57	15	71
66									16	57
72									18	45

SEE NOTE 1

CORRUGATED ALUMINUM PIPE ARCHES 3 in x 1in CORRUGATIONS								
PIPE DIM. SPAN x RISE inch	CORNER RADIUS inch	MIN. COVER inch	MIN. THICKNESS inch	MAX FILL HEIGHT ft.				
53 × 41	7	24	0.105	7				
60 × 46	8	24	0.105	7				
66 × 51	9	18	0.105	9				
73 × 55	12	18	0.105	10				
81 × 59	14	18	0.105	11				
87 × 63	14	18	0.105	10				
95 × 67	16	18	0.105	11				
105 × 71	16	24	0.135	10				
112 × 75	18	24	0.135	10				

0.164

10

THICKNESSES

117 × 79 18 24

NOTE 1:TABLE IS FOR PIPE WITH HELICAL LOCK SEAMS OR HELICAL WELDED SEAMS ONLY.

ROUND CORRUGATED ALUMINUM STRUCTURAL PLATE PIPE 9 in \times 2 1 /₂ in CORRUGATIONS BOLTED FABRICATION 5 1/3 BOLTS/FOOT 3 /₄ in DIA.

THICKNESS	0.1	00	0.1	25	0.	50	0.17	'5	0.	200	0.22	25	0.25	50
PIPE DIAMETER	MIN. COVER	MAX. FILL	MIN. COVER	MAX.	MIN. COVER	MAX.	MIN. COVER	MAX. FILL	MIN. COVER	MAX. FILL	MIN. COVER	MAX. FILL	MIN. COVER	MAX.
(in)	inch	ft.	inch	ft.	inch	ft.	inch	ft.	inch	ft.	inch	ft.	inch	ft.
60	12	29 31	12	38 45	12	49 60	12	58 70	12	58 81	12	58 92	12	58 103
66	12	26 28	12	35 41	12	44 54	12	53 64	12	53 74	12	53 84	12	53 94
72	13	24 25	12	32 37	12	41 50	12	48 58	12	48 67	12	48 77	12	48 86
78	14	22 23	12	29 35	12	37 46	12	45 54	12	45 62	12	45 71	12	45 79
84	15	20 22	13	27 32	12	35 42	12	41 50	12	41 58	12	41 66	12	41 73
90	16	19 20	14	25 30	13	32 40	12	39 47	12	39 54	12	39 61	12	39 68
96	17	18 19	15	24 28	14	30 37	13	36 44	12	36 50	12	36 57	12	36 64
102	18	17 18	16	22 26	15	29 35	14	34 41	13	34 47	13	34 54	13	34 60
108	19	16 17	17	21 25	16	27 33	14	32 39	14	32 45	14	32 51	14	32 57
114	20	15 16	18	20 23	16	25 31	15	30 37	15	30 42	15	30 48	15	30 54
120	21	14 15	19	19 22	17	24 30	16	29 35	15	29 40	15	29 46	15	29 51
126	22	13 14	20	18 21	18	23 28	17	27 33	16	27 38	16	27 44	16	27 49
132	23	13 14	21	17 20	19	22 27	18	26 32	17	26 37	17	26 42	17	26 47
138	24	12 13	22	16 19	20	21 26	18	25 30	18	25 35	18	25 40	18	25 44
144	25	12 12	22	16 18	21	20 25	19	24 29	18	24 33	18	24 38	18	24 43
150			23	15 18	21	19 24	20	23 28	19	23 32	19	23 36	19	23 41
156				14 17	22	18 23	21	22 27	20	22 31	20	22 35	20	22 39
162					23	18 22	21	21 26	21	21 30	21	21 34	21	21 38
168					24	17 21	22	20 25	21	20 29	21	20 33	21	20 36
174					25	17 20	23	20 24	22	20 28	22	20 31	22	20 35
180							24	19 23	23	19 27	23	19 30	23	19 34
186							25	18 22	24	18 26	24	18 29	24	18 33
192									24	18 25	24	18 28	24	18 32
198									25	17 24	25	17 28	25	17 31
204									26	17 23	26	17 27	26	17 30
210											27	16 26	27	16 29
216											27	16 25	27	16 28
222													28	15 27
228													29	15 27

39 CLOWER FIGURE FOR PIPE WITH ALUMINUM BOLTS LOWER FIGURE FOR PIPE WITH STEEL BOLTS

ROUND CORRUGATED ALUMINUM PIPE 3/4 in × 3/4 in × 71/2 in CORRUGATIONS SPIRAL RIB PIPE

		<u> SP I</u>	RAL F	<u> ₹IB</u> F	<u> </u>			
THICKNESS	0.0	160	0.07	5	0.105	;	0.13	5
PIPE DIAMETER inch	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.	MIN. COVER inch	MAX. FILL ft.
18	12	55	12	76				
21	12	47	12	65	12	105		
24	12	41	12	57	12	92		
30	15	33	12	45	12	73		
36	18	27	15	38	12	61	12	86
42			18	32	15	52	12	74
48					18	46	15	65
54					21	40	15	57
60					24	36	18	52
66							21	47
72							24	43

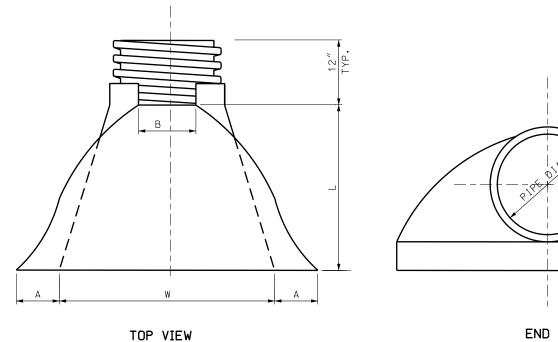
FOR HEAVY CONSTRUCTION LOADS (100 KIPS AXLE LOAD) AT LEAST FOUR FEET OF COMPACTED MATERIAL IS NEEDED OVER THE TOP OF THE PIPE.

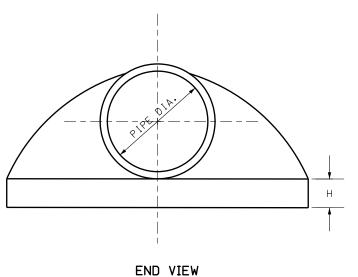
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah FILL HEIGHT FOR METAL PIPE (ALUMINUM)

JULY Ø3,2ØØ2 DATE

STD DWG DG 2

HIGH DENSITY POLYETHYLENE END SECTION (HDPE)



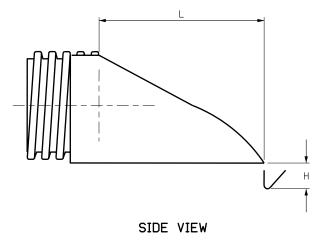




PIPE	DIMENSIONS IN INCHES							
DIAMETER inch	A(1+)	B MAX	H(1±)	L(1/2±)	W(2 <u>+</u>)			
18	7.5	15	6.5	32	35			
24	7.5	18	6.5	36	45			
30	10.5	N/A	7.0	53	68			
36	10.5	N/A	7.0	53	68			

TABLE 2: MAXIMUM FILL HEIGHT (SEE NOTE NO. 3)

	PIPE TYPE							
PIPE SIZE DIA.	HIGH DENSITY POLYETHYLENE RIBBED SMOOTH		WALL THICKNESS inches CHLORIDE (CORRUGATED POLYETHYLENE (HDPE)
inch	LINED (HDPE)	0.6	0.85	0.92	1.15	1.38	(PVC)	(AASHTO M 294)
			MAX.FI	LL HEIG	HT ft.			
12								30
15								30
18	24		46				24	30
24	24			34			25	30
30	24				34		23	30
36	24					34	22	30
42								
48								



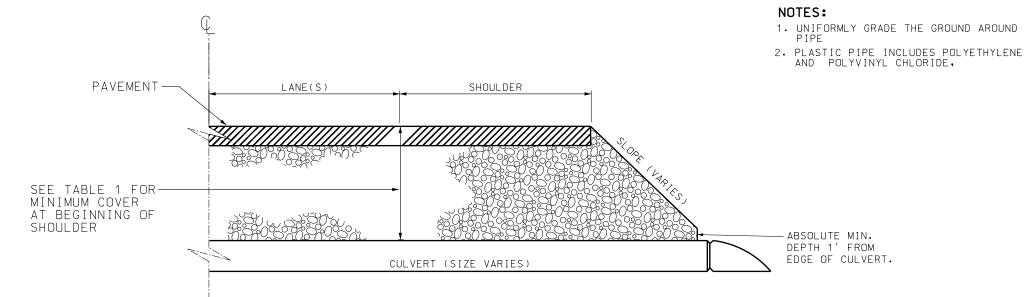
NOTES:

- 1. IN ORDER TO ASSURE PROPER FIT WITH 30" AND 36" END SECTIONS ARE ATTACHED BY WELDING TO A SHORT STUB OF 30" OR 36" PIPE AND REQUIRE A STANDARD CONNECTING BAND TO MAKE THE ATTACHMENT.
- 2. DO NOT USE CULVERT END SECTIONS WITHIN THE CLEAR ZONE.
- 3. MAXIMUM FILL HEIGHT MEASURED FROM TOP OF PIPE TO TOP OF PAVEMENT SURFACE AT HIGHEST FILL SECTION.

			REVISIONS
	UIAH DEFAKIMENI UF IKANSPUKIAIJUN	1 08/26/02 M.F	08/26/02 M.F CORRECT SPELLING. MADE EDITORIAL CHANGES TO
HI CILL FALLY CA	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION		NOTES 1.2 AND TABLE 2.
MAXIMUM FILL HEIGHI	SALT LAKE CITY, UTAH		
TONDITCHS CNE CNO			
	RECOMMENDED FOR APPROVAL		
PVC PIPES	CHAIRMAN STANDARDS COMMITTEE		
TANDARD DRAWING TITLE	DEPUTY DIRECTOR	NO. DATE APPR.	REMARKS

DG 3

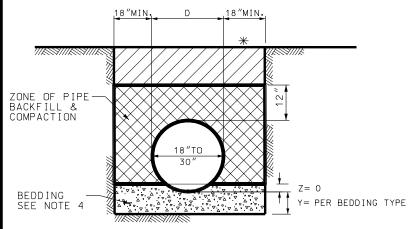
PIPE CULVERT MINIMUM COVER



TA	BLE 1: PIP	E CULVERTS	MINIMUM C	OVER
SURFACE TYPE	CORRUGATED METAL PIPES AND PIPE ARCHES	STRUCTURAL PLATE PIPES AND PIPE ARCHES	REINFORCED CONCRETE PIPES	PLASTIC PIPES (SEE NOTE 2)
FLEXIBLE PAVEMENTS OR UNPAVED	1/5 (DIA. OR SPAN) OR 2' MIN.	1/8 (DIA. OR SPAN) OR 2' MIN.	2′ MIN.	2′ MIN.
RIGID PAVEMENTS	1/5 (DIA. OR SPAN) OR 1'6"MIN.	1/8 (DIA. OR SPAN) OR 1/6" MIN.	1'6" MIN.	2′ MIN.

		NOT HINDLONIAN TO INDICINITION THID	1 08/28/02 M.F. CORRECT ARROW IN PIPE CULVERT MINIMUM COVER DETAIL.
		STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	
	ST	SALT LAKE CITY, UTAH	
כ		יייייייייייייייייייייייייייייייייייייי	
		KECUMMENDED FOK APPKOVAL	
<u> </u>	MINIMOM COVER	DEC.19,2002	
ŀ		CHAIRMAN STANDARDS COMMITTEE	
		DEC.19,2002	
	STANDARD DRAWING TITLE	DEPUTY DIRECTOR DATE	NO, DATE APPR.

BACKFILL/ BEDDING REQUIREMENTS FOR PLASTIC PIPE, METAL PIPE & PIPE ARCH CULVERTS

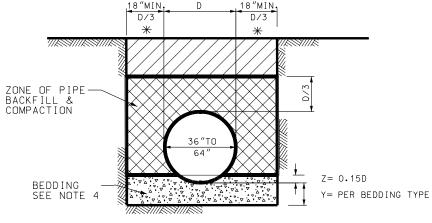


FOR TYPE I BEDDING Y= 8"
FOR TYPE II BEDDING Y=12"
FOR TYPE III BEDDING Y=24"

* INCREASE THIS DIMENSION TO D IF PIPE IS PLACED IN AN EMBANKMENT WITHOUT THE BENEFIT OF TRENCHING

DETAIL "A"

FOR CIRCULATOR PIPE HAVING DIAMETERS LESS THAN 36"

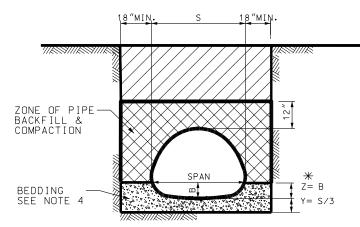


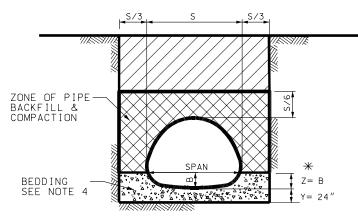
FOR TYPE I BEDDING Y= 8" BEDDING Y=12" FOR TYPE III BEDDING Y=24

* INCREASE THIS DIMENSION TO D IF PIPE IS PLACED IN AN EMBANKMENT WITHOUT THE BENEFIT OF TRENCHING

DETAIL "C"

FOR CIRCULATOR PIPE HAVING DIAMETERS BETWEEN 36" AND 72" INCLUSIVE





* Z = DEPTH OF BEDDING AT INVERT IS TO THE WIDEST POINT ON THE PIPE ARCH CULVERT.

DETAIL "B"

FOR ARCH PIPE HAVING SPANS LESS THAN 72" INCLUSIVE

DETAIL "D"

FOR ARCH PIPE HAVING SPANS OF 74" AND LARGER

LEGEND:



- USE ON SITE BEDDING MATERIAL OR GRANULAR BACKFILL BORROW (2" MAX.) AS REQ'D. (IN ACCORDANCE WITH THE TYPE OF BEDDINGS I.II OR III) MEETING THE
- FOLLOWING REQUIREMENTS:

 A. ON-SITE MATERIAL EXCLUDING UNSTABLE SOIL AS DEFINED BELOW.

 B. USE GRANULAR BACKFILL BORROW HAVING INTERMEDIATE FRACTIONS FROM NO.200 SIEVE TO 2" MAXIMUM MATERIAL.



ZONE OF PIPE BACKFIL & COMPACTION. USE ON-SITE MATERIAL CONTAINING NO ROCK LARGER THEN 2" IN SIZE & FREE OF FROZEN LUMPS OR CLAY.

FLOWABLE FILL MAY BE USED FOR BACKFILL AND BEDDING.

NOTES:

- 1. PRECOMPACTION & COMPACTION: PER AASHTO T 99 WITH DENSITY NOT LESS THAN 96 PERCENT OF LABORATORY DENSITY.
- 2. BEDDING DETAIL AS SHOWN IS FOR USE WITH UDOT'S STANDARD DRAWINGS DG 1, DG 2 & DG 3.
- 3. RECESS THE BEDDING TO RECEIVE CULVERT JOINTS WHERE APPLICABLE.
- 4. HAUNCH AREAS UNDER PIPE MUST BE IN FIRM AND INTIMATE CONTACT WITH THE ENTIRE BOTTOM SURFACE OF THE PIPE WITHOUT DISTURBING THE PIPE FROM SPECIFIED LINE AND GRADE.
- 5. THE WIDTH OF THE TRENCH BOX, OR OTHER SHIELD, MUST EXCEED THE REQUIRED WIDTH OF THE BACKFILL IN THE BEDDING AND BACKFILL ZONES.

TABLE 1

TYPE OF BEDDING	TYPE OF SOIL FOUNDATION	TYPE OF BEDDING MATERIAL
TYPE I	OTHER THAN ROCK OR UNSTABLE SOIL	ON-SITE MATERIAL TO BE PRECOMPACTED
TYPE II	ROCK	ON - SITE MATERIAL
TYPE III	UNSTABLE	GRANULAR BACKFILL Borrow (2" max.)

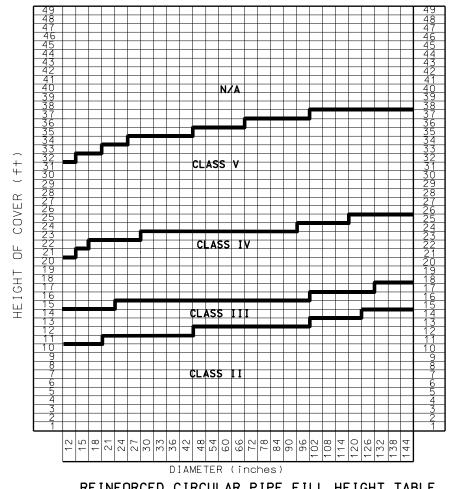
UNSTABLE SOILS = FOUNDATION CONSISTING OF ALL ORGANIC SOILS OR MATERIALS SUCH AS PEAT, MOSS & BOG, OR FINE GRAINED SOILS (SILTS OR CLAYS) AND UNCEMENTED SANDS WHOSE WATER CONTENT EXCEED THEIR LIQUID LIMIT, SUCH SOILS WILL REQUIRE THAT A "TYPE III" BEDDING BE USED.

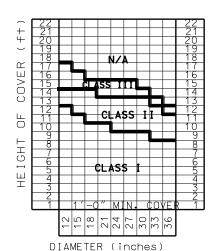
JULY Ø3,2ØØ2 DATE UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah CHAIRMAN APPROVED PIPE

ASTIC PIPE,METAL POR PIPE ARCH CULVERT BEDDING PLASTIC OR

STD DWG

DG 5





NON-REINFORCED CIRCULAR PIPE FILL HEIGHT TABLE

LEGEND:



- USE ON SITE BEDDING MATERIAL OR GRANULAR
 BACKFILL BORROW (2"MAX.) AS REQ'D. (IN ACCORDANCE
 WITH THE TYPE OF BEDDINGS I.II OR III) MEETING THE
 FOLLOWING REQUIREMENTS:
 - A. ON-SITE MATERIAL EXCLUDING UNSTABLE SOIL AS DEFINED BELOW.
 - B. USE GRANULAR BACKFIL BORROW HAVING INTERMEDIATE FRACTIONS FROM NO.200 SIEVE TO 2" MAXIMUM MATERIAL.



ZONE OF PIPE BACKFIL & COMPACTION, USE ON-SITE MATERIAL CONTAINING NO ROCK LARGER THEN 2" IN SIZE & FREE OF FROZEN LUMPS OR CLAY.

NOTES:

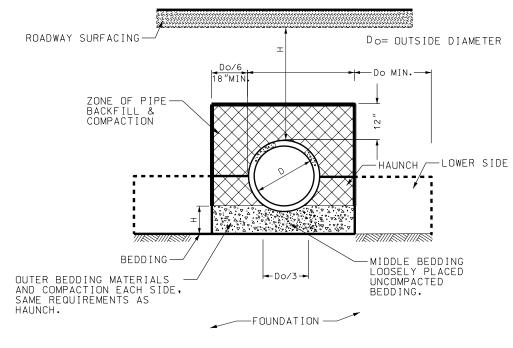
- 1. PRECOMPACTION & COMPACTION: REFER TO AASHTO T-99
- 2. RECESS THE BEDDING TO RECEIVE CULVERT JOINTS WHERE APPLICABLE.
- 3. HAUNCH AREAS UNDER PIPE MUST BE IN FIRM AND INTIMATE CONTACT WITH THE ENTIRE BOTTOM SURFACE OF THE PIPE WITHOUT DISTURBING THE PIPE FROM SPECIFIED LINE
- 4. USE A MINIMUM 12 inches HEIGHT (H) OF FILL BETWEEN THE TOP THE CULVERT AND BOTTOM OF ROADWAY SURFACING FOR REINFORCED AND NON-REINFORCED CONCRETE PIPES.
- 5. MAINTAIN A MINIMUM 24 inches OF COVER FOR REINFORCED AND 48 inches OF COVER FOR NON-REINFORCED PIPE DURING CONSTRUCTION.

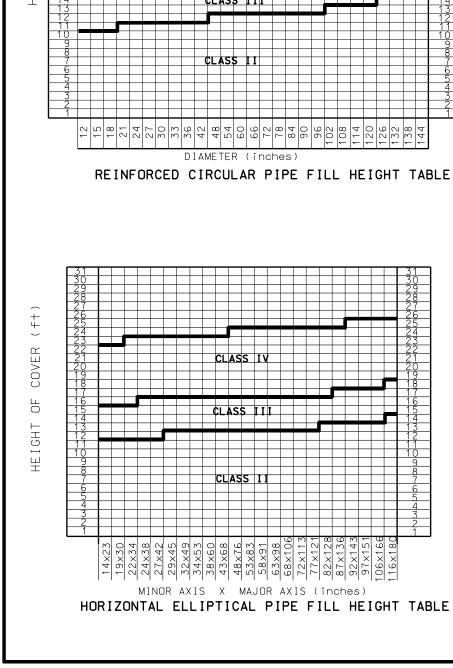
INSTALLATION SOILS AND MINIMUM COMPACTION REQUIREMENTS

TYPE OF BEDDING	TYPE OF SOIL FOUNDATION	BEDDING THICKNESS	HAUNCH & OUTER BEDDING	LOWER SIDE
TYPE I	OTHER THAN ROCK OR UNSTABLE SOIL	Do/24 BUT NOT LESS THAN 6"	95 % A1,A3	90% A1, A3 OR 95% A2, A4 OR 100% A5, A6 OR NATURAL SOILS OF EQUAL FIRMNESS
TYPE I I	ROCK	Do/12 BUT NOT LESS THAN 12"	95 % A1,A3	90% A1, A3 OR 95% A2, A4 OR 100% A5, A6 OR NATURAL SOILS OF EQUAL FIRMNESS
TYPE III	UNSTABLE *	NOT LESS THAN 12"	95 % A1,A3	90% A1, A3 OR 95% A2, A4 OR 100% A5, A6 OR NATURAL SOILS OF EQUAL FIRMNESS

* UNSTABLE SOIL FOUNDATION: FOUNDATION CONSISTING OF ORGANIC SOILS OR MATERIALS SUCH AS PEAT. MOSS & BOG OR FINE GRAINED SOILS (SILTS OR CLAYS) AND UNCEMENTED SANDS WHOSE WATER CONTENT EXCEEDS THEIR LIQUID LIMIT, SUCH SOILS WILL REQUIRE THAT A "TYPE III" BEDDING BE USED.

BACKFILL / BEDDING REQUIREMENTS





STD DWG DG 6

OF TRANSPORTATION
AD AND BRIDGE CONSTRUCTION
CITY, UTAH

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H DEPARTMENT OF
DRAWINGS FOR ROAD
SALT LAKE (

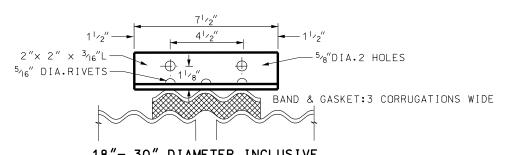
UTAH Standard di

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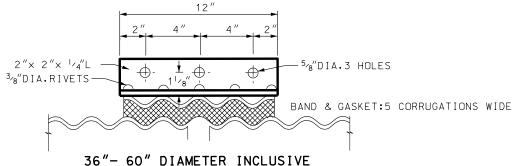
T CONCRETE CULVERT

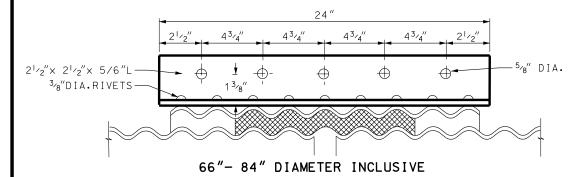
PRECAST PIPE

CHAIRMAN APPROVED

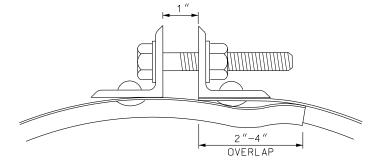


18"- 30" DIAMETER INCLUSIVE



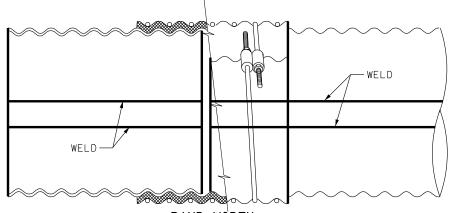


BAND: 9 CORRUGATIONS WIDE GASKET:5 CORRUGATIONS WIDE



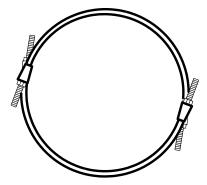
 $^{\rm I}{\rm '}{\rm '}{\rm '}{\rm ''}{\rm DIA}$ hex. Bolt & nut with washer or $^{\rm I}{\rm '}{\rm '}{\rm ''}{\rm ''}{\rm DIA}$. Carriage Bolt & nut with washer $(9/16" \times \frac{3}{4}" \text{ SLOTTED OPENING})$

TYPE "A" C.M.P. COUPLING



BAND WIDTH

7.5"FOR 18"- 30" DIA. C.M.P. INCLUSIVE 12" FOR 36"- 60" DIA. C.M.P. INCLUSIVE 24" FOR 66"- 84" DIA. C.M.P. INCLUSIVE 1 PIECE BAND FOR 18" - 42" DIA. C.M.P. 2 PIECE BAND FOR 48" - 84" DIA. C.M.P.



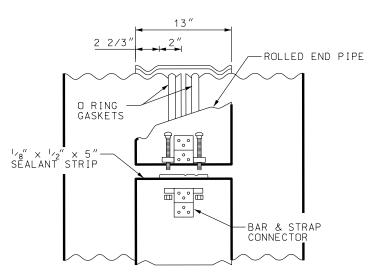
TYPE "B" C.M.P. COUPLING

SIZE OF ROD & SILO TYPE LUG

''," DIA. FOR 18" - 21" DIA. C.M.P.
3'," DIA. FOR 24" - 36" DIA. C.M.P.
1',2" DIA. FOR 42" - 84" DIA. C.M.P.
1 PIECE HOOPS FOR 18" - 42" DIA. C.M.P.
2 PIECE HOOPS FOR 48" - 84" DIA. C.M.P.

TABLE 1

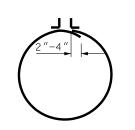
NOMINAL PIPE DIAMETER	GASKET LENGTH
inch	inch
15	44
18	54
21	63
24	72
27	80
30	90
33	97
36	107
42	126
48	144
54	160
60	179
66	198
72	214
78	232
84	248
90	267
96	286

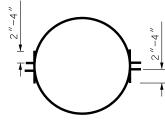


BAND THICKNESS: MATCH PIPE WALL THICKNESS, BUT IN NO CASE LESS THAN 16 GAUGE AND NEED NOT EXCEED 14 GAUGE. USE TWO PIECE BAND FOR PIPE OVER 42" DIAMETER.

TYPE "C"

LONGITUDINAL SEAMS OF C.M.P. AT 45°.

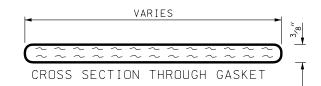




ONE PIECE BAND FOR 18"- 42"DIA. PIPE CULVERTS.

TWO PIECE BAND FOR 48"- 84"DIA. PIPE CULVERTS.

ALTERNATE OVERLAPS FOR TWO PIECE BANDS, FOR BOTH TYPES, AS SHOWN ON DIAGRAM



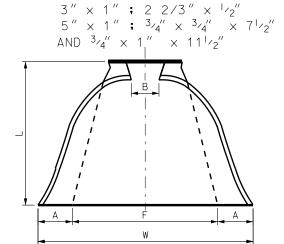
NOTES:

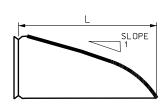
- 1.THICKNESS OF CONNECTING BANDS: IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
- 2. KEEP DIRT & GRAVEL FROM BETWEEN PIPE & BAND.
- 3.USE A CHAIN HOIST, CHAIN OR CABLE CINCHING TO PRODUCE A TIGHT JOINT BEFORE NUTS ARE TIGHTENED.
- 4.USE A 2"MINIMUM OVERLAP FOR BANDS.
- 5.COMPLY WITH TABLE 1 FOR GASKETS DIMENSIONS USE A CLOSED CELL NEOPRENE, SKINNED ALL FOUR SIDES MATERIAL MEETING THE REQUIREMENTS OF ASTM D 1056 GRADE SCE-43L. GASKETS; 1-PIECE CONTINUOUS CONSTRUCTION.
- 6.FOR FASTENING ANGLES USE FLATHEAD RIVETS FREE OF SHARP POINTS OR EDGES (AASHTO M 36-60).

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	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	CTION			
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CHONELED COINING ON					
COLIPI ING BANDS	RECOMMENDED FOR APPROVAL				
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		0000000			
STANDARD DRAWING TITLE	DEPUTY DIRECTOR	DATE NO	NO. DATE APPR.	APPR.	

STD DWG DG 7

END SECTIONS FOR CIRCULAR PIPE CORRUGATIONS





TYPICAL CROSS SECTION

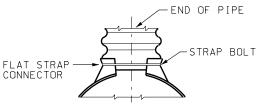
PLAN -REINFORCED OPTIONAL TOE PLATE EXTENSION (SEE NOTE #4) 12"C.TO C. (MAX. SPCG.)

ELEVATION

LINE	PIPE	THICK-		END :	SECT	ION DI	MENS	IONS	
NO.	DIA	-NESS	Α	В	Н	F	L	W MAX.WIDTH	APPROXIMATE AVERAGE END
	inch	inch	inch	inch	inch	inch	inch	inch	SECTION SLOPE
1	12	0.064	5	7	6	22	21	44	21/4
2	15	0.064	6	8	6	28	26	52	21/4
3	18	0.064	7	10	6	34	31	58	21/8
4	21	0.064	8	12	6	40	36	66	21/8
5	24	0.064	9	13	6	46	41	72	21/8
6	30	0.079	11	16	8	55	51	88	21/8
7	36	0.079	13	19	9	70	60	105	2
8	42	0.109	15	25	10	82	69	122	21/8
9	48	0.109	17	29	12	88	78	131	2
10	54	0.109	17	33	12	100	84	143	2
11	60	0.109	17	36	12	112	87	157	1 ⁷ ⁄8
12	66	0.109	17	39	12	118	87	162	1 ⁵ / ₈
13	72	0.109	17	44	12	120	87	169	1 ⁷ ⁄8
14	78	0.109	17	48	12	130	87	178	1 ³ / ₈
15	84	0.109	17	52	12	136	87	184	1 1/3
16	90	0.109	17	58	12	142	87	188	11/4
17	96	0.109	17	58	12	144	87	197	11/8

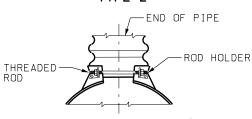
- FILL SLOPE NEED NOT MATCH THE END SECTION SLOPE. FILL CAN BE SHAPED AT EACH SITE TO FIT.
- .SOME LARGER SIZES MAY REQUIRE FIELD ASSEMBLY.
- OPTIONAL TOE PLATES MAY BE PROVIDED TO DEPTH SPECIFIED.
- .FOR 78" x 52" AND 84" x 58" SIZES
 REINFORCED EDGES TO BE SUPPLEMENTED WITH GALVANIZED
 STIFFENER ANGLES. THE ANGLES TO BE ATTACHED BY
 GALVANIZED NUTS AND BOLTS FOR STEEL UNITS OR
 ALUMINIUM NUTS AND BOLTS FOR ALUMINIUM UNITS.

TYPE 1



AVALIABLE IN SIZES 12"
THROUGH 24" ROUND AND
17" × 13" THROUGH
28" × 22" PIPE-ARCHES

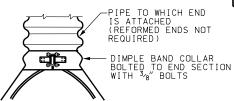
TYPE 2



AVALIABLE IN SIZES 30"
THROUGH 96" ROUND AND
35" x 24" THROUGH
57" x 38" PIPE-ARCHES

TYPE 3

ROD



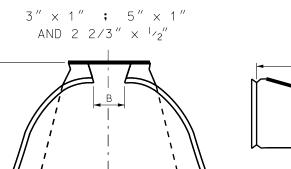
AVAILABLE FOR ALL ROUND AND PIPE ARCH SIZES SHOWN (TYPE 1 AND TYPE 2 CONDITIONS ARE RECOMMENDED FOR THE SMALLER SIZES WITH ANNULAR ENDS)

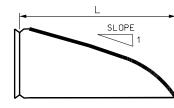
APPLICABLE SPECIFICATIONS (CIRCULAR AND ARCH PIPE)

- AASHTO M 218 (GALVANIZED STEEL SHEET) AASHTO M 197 (ALUMINIUM ALLOY SHEET)
- 2. ALL 3 PIECE BODIES TO HAVE 12 GAUGE MIN. SIDES AND 10 GAUGE MIN.CENTER PANELS. MULTIPLE PANEL BODIES TO HAVE SEAMS WHICH ARE TO BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINIUM RIVETS OR BOLTS FOR ALUMINUM UNITS.
- 3. GALVANIZED STEEL OR ALUMINIUM TOE PLATE TO BE AVAILABLE AS AN ACCESSORY, WHEN SPECIFIED, AND WILL BE THE SAME THICKNESS AS THE END SECTION.
- 4. GALVANIZED STEEL OR ALUMINIUM LIFTING LUG AVAILABLE AS AN ACCESSORY, WHEN SPECIFIED.
- 5. END SECTIONS CAN BE USED WITH ANY OR PIPE OR PIPE ARCH WALL THICKNESS SPECIFIED.

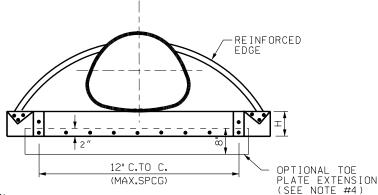
END SECTIONS FOR CORRUGATED METAL PIPE ARCHES

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TYPICAL CROSS SECTION



ELEVATION

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PLAN

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	CDAN	EQUIV	THICK	NESS		END	SECTI	ON DI	MENS I ON:	S	
LINE NO.	SPAN X RISE	ROUND	GALV. STEEL	ALUM.	A MIN.	B MAX.	H MIN.	F MIN.	L <u>+</u> 50	W MAX.WIDTH	APPROXIMATE AVERAGE AND SECTION SLOPE
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	
1	17×13	15	0.064	5	5	9	6	28	20	52	21/8
2	21×15	18	0.064	6	6	11	6	34	24	58	2
3	24×18	21	0.064	7	7	12	6	40	28	63	21/8
4	28×20	24	0.064	7	7	16	6	46	32	70	2
5	35×24	30	0.079	9	9	16	6	58	39	85	1 ⁷ ⁄8
6	42×29	36	0.079	11	11	18	7	73	46	104	17/8
7	49×33	42	0.109	12	12	21	9	82	53	117	13/4
8	57×38	48	0.109	16	16	26	12	88	62	132	1 ⁷ ⁄8
9	64×43	54	0.109	17	17	30	12	100	69	144	17/8
10	71×47	60	0.109	17	17	36	12	112	77	156	17/8
11	77×52	66	0.109	17	17	36	12	124	77	167	1 ⁵ / ₈
12	83×57	72	0.109	17	17	44	12	130	77	177	11/2

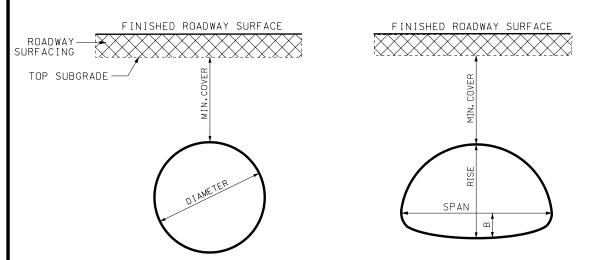
- FILL SLOPE NEED NOT MATCH THE END SECTION SLOPE. FILL CAN BE SHAPED AT EACH SITE TO FIT.
- 1. SOME LARGER SIZES MAY REQUIRE FIELD ASSEMBLY.
- 2. OPTIONAL TOE PLATES MAY BE PROVIDED TO DEPTH SPECIFIED.
- 3.FOR 78" x 52" AND 84" x 58" SIZES REINFORCED EDGES
 TO BE SUPPLEMENTED WITH GALVANIZED STIFFENER ANGLES. THE ANGLES
 TO BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS
 OR ALUMINIUM NUTS AND BOLTS FOR ALUMINIUM UNITS.
- 4.ANGLE REINFORCMENT WILL BE PLACED UNDER THE CENTER PANEL SEAMS ON THE $88\,^{\prime\prime}\,\times\,58\,^{\prime\prime}$ SIZES.

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RECOMMENDED FOR APPROVAL				
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CHAIRMAN STANDARDS COMMITTEE	DATE			
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. CULVERT SECTION ETAL END

DG 8

METAL & PLASTIC CULVERTS METAL PIPE ARCHES

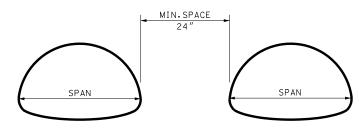


MINIMUM COVER

- A. MEASURE MINIMUM COVER FROM THE TOP OF PIPE CULVERT TO THE BOTTOM OF ROADWAY SURFACING.
- B. MEASURE MAXIMUM FILL HEIGHT FROM THE TOP OF THE PIPE THE PIPE TO THE TOP OF THE PAVEMENT FOR BOTH FLEXIBLE AND RIGID PAVEMENTS.
- C. MINIMUM COVER OVER THE CROWN OF THE PIPE IS ADEQUATE ONLY FOR FINISHED CONSTRUCTION. PROVIDE ADEQUATE COVER TO PROTECT PIPE AND PIPE ARCH FROM DAMAGE DURING CONSTRUCTION..

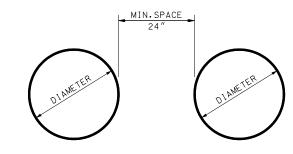
MULTIPLE INSTALLATIONS

PIPE ARCHES



SPAN (1nch)	MINIMUM SPACE
UP TO 36	24
72 TO 86	1/3 SPAN

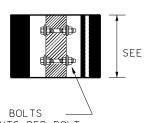
PIPE CULVERTS



DIAMETER (inch)	MINIMUM SPACE
UP TO 24	24
48 TO 96	¹∕2 DIAMETER
96 TO 120	48

METAL INSERT

FOR CONNECTING CONCRETE PIPE OR CORRUGATED POLYETHYLENE PIPE TO METAL END SECTION.







5/8" GALV. BOLTS —— WITH 3 NUTS PER BOLT.

METAL INSERTS

- 1. FABRICATED END SECTION FROM NON FLAMMABLE MATERIALS.
- 2. CONNECT METAL END SECTIONS TO CONCRETE PIPES OR PLASTIC PIPES USING METAL INSERTS.
- 3. FOR PIPE DIAMETERS UP TO AND INCLUDING 60 inch. USE A MINIMUM OF 2 BOLTS WITH A LENGTH OF 12 inches MINIMUM.
- 4. FOR PIPE DIAMETERS GREATER THAN 60 inch USE A MINIMUM OF 3 BOLTS WITH A LENGTH OF 18 inch MINIMUM.
- 5. GALVANIZED METAL INSERT AND ALL BOLTS, WASHERS AND RIVETS OR WELDS.
- 6. USE THE SAME WALL THICKNESS FOR METAL INSERT AND METAL
- 7. CLEAN AND COAT ALL WELDS WITH APPROVED ZINC RICH COMPOUND AS RECOMMENDED BY THE SHEET MANUFACTURE.

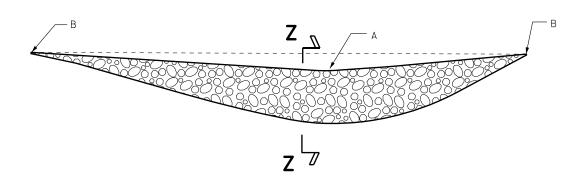
MISCELLANEOUS PIPE DETAILS

STD DWG

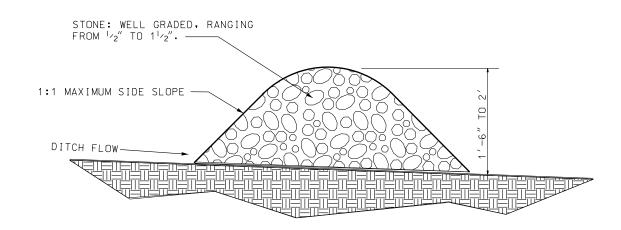
DG 9

CHECK DAMS

CONSTRUCT THE CHECK DAM SO THAT POINT "A" IS APPROXIMATELY 4" LOWER THAN POINT "B".



STONE CHECK DAM



SECTION Z - Z

CONSTRUCT THE CHECK DAM SO THAT POINT "A" IS A MINIMUM OF 4" LOWER THAN POINT "B". TIGHTLY BUTT BALE ENDS-

STRAW OR HAY BALE CHECK DAM

-2" SQUARE BY 4' MINIMUM HARDWOOD STAKE. PROVIDE 2 STAKES PER BALE.

- INSTALL 6' WIDE EROSION CONTROL BLANKET AS A SCOUR APRON ALONG THE DOWNSTREAM SIDE OF THE DAM. ANCHOR 10" OF THE BLANKET EDGE UNDER THE BALES AND SECURE IT WITH 8" METAL "U" STAKES.

STRAW OR HAY BALE -

PLACE 3" OF EXCAVATED MATERIAL ON THE RECEIVING

DITCH FLOW

KEY-IN BALES 6" DEEP

SECTION Y - Y

END OF THE BALE AND COMPACT.

NOTES:

- 1. PLACE CHECK DAMS PERPENDICULAR TO THE FLOWLINE OF THE DITCH.
- 2. DO NOT PLACE CHECK DAMS ACROSS NATURAL STREAM BEDS.
- 3. CONSTRUCT CHECK DAMS TO ENSURE WATER DOES NOT FLOW AROUND THE ENDS OF THE DAM.

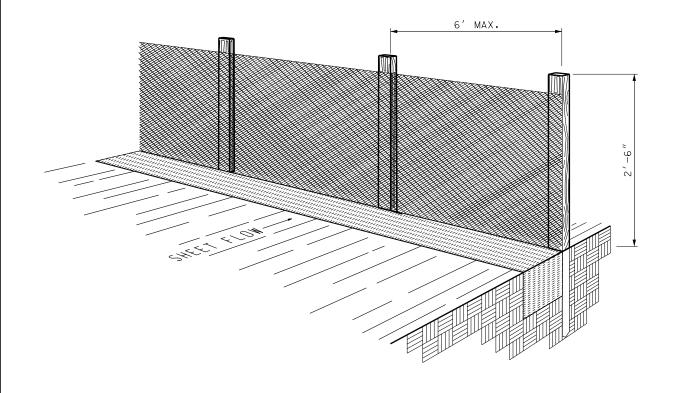
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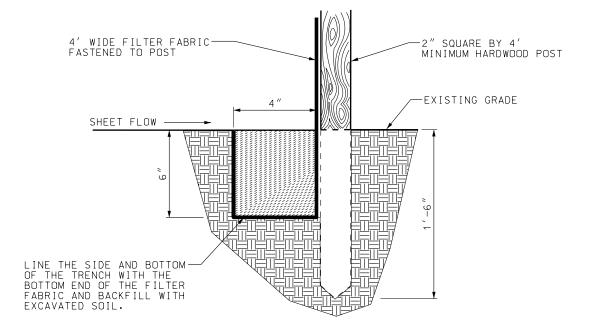
TEMPORAR EROSION CON (CHECK DAI

STD DWG

EN 1

SILT FENCE





PERSPECTIVE VIEW

SECTION

NOTES:

- 1. WHERE POSSIBLE, LAYOUT THE SILT FENCE 5' TO 10' BEYOND THE TOE OF SLOPE.
- 2. ALIGN THE FENCE ALONG THE CONTOUR AS CLOSE AS POSSIBLE.
- 3. WHEN EXCAVATING THE TRENCH, USE MACHINERY THAT WILL PRODUCE NO MORE THAN THE DESIRED DIMENSIONS.
- 4. EXTEND THE BOTTOM 1'- 4" OF FILTER FABRIC TO LINE ALL THREE SIDES OF THE TRENCH.
- 5. TO AVOID EXCESSIVE PONDING OF WATER AT LOW POINTS ALONG THE FENCE, PROVIDE AN OPENING IN THE SILT FENCE AND INSTALL A CHECK DAM.
- 6. AVOID USING JOINTS ALONG THE FENCE AS MUCH AS POSSIBLE. IF A JOINT IS NECESSARY, SPLICE THE FILTER FABRIC AT A POST WITH 6" OVERLAPS AND SECURELY FASTEN BOTH ENDS TO THE POST.
- 7. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL DISTURBED AREAS HAVE BEEN VEGETATED.
- 8. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

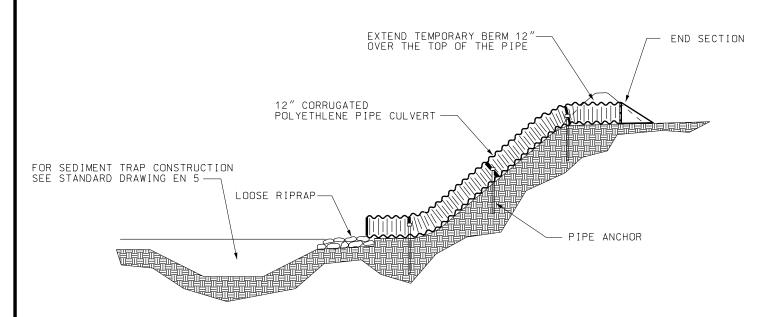
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TEMPORARY
EROSION CONTROL
(SILT FENCE)

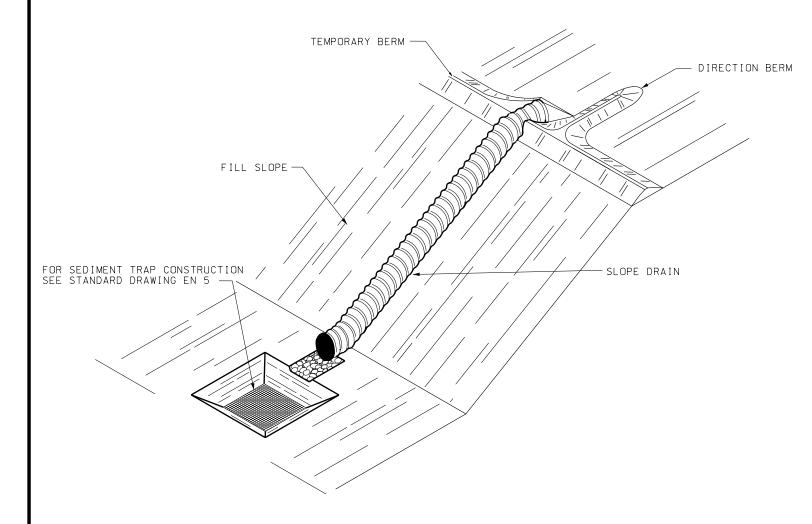
EN 2

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt lake city, utah

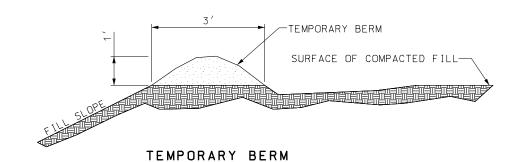
SLOPE DRAIN AND TEMPORARY BERM



SLOPE DRAIN SECTION



SLOPE DRAIN ISOMETRIC



NOTES FOR TEMPORARY BERM:

- 1. COMPACT THE RIDGE OF EXISTING SOIL TO PROVIDE A NON-ERODIBLE BERM THAT DIVERTS STORM RUNOFF FROM RECENTLY CONSTRUCTED SLOPES. REPAIR ANY EROSION OF THE BERM IMMEDIATELY.
- 2. TEMPORARY BERMS ARE TYPICALLY USED IN CONJUCNCTION WITH

NOTES FOR SLOPE DRAIN:

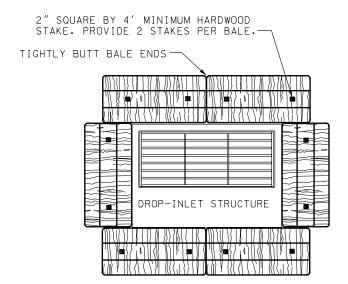
- 1. COMPACT THE SOIL SURFACE AND BERMS AROUND THE ENTRANCE TO THE PIPE END SECTION TO PREVENT WATER FROM UNDERMINING THE PIPE AND ERODING THE SLOPE. REPAIR ANY EROSION AROUND THE INLET, OUTLET OR SLOPE IMMEDIATELY.
- 2. ANCHOR THE PIPE TO THE GROUND EVERY 10' TO PREVENT PIPE MOVEMENT AND SUBSEQUENT FAILURES DURING STORM EVENTS.
- 3. USE WATER-TIGHT FITTINGS AT ALL SLOPE DRAIN CONNECTIONS.
- 4. EXTEND THE DRAIN A MINIMUM OF 3' BEYOND THE TOE OF THE SLOPE AND PROVIDE OUTLET PROTECTION.
- 5. EXTEND THE SLOPE DRAIN AS REQUIRED TO COINCIDE WITH THE HEIGHT OF THE EMBANKMENT.
- 6. MAINTAIN PROPERLY FUNCTIONING SLOPE DRAINS UNTIL SLOPES HAVE BEEN PERMANENTLY STABILIZED.
- 7. 50 PERCENT OF THE RIPRAP TO BE BETWEEN 6" AND 8" WITH A MAXIMUM SIZE OF 12" AND A MINIMUM SIZE OF 4".

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REVISIONS								REMARKS

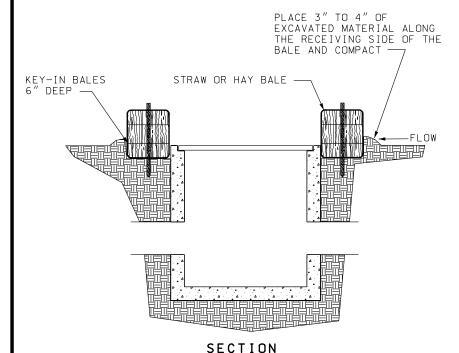
STD DWG EN 3

DROP-INLET BARRIERS

STRAW AND HAY BALE DROP-INLET BARRIER



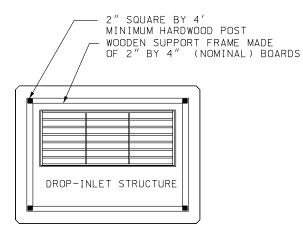
PLAN VIEW



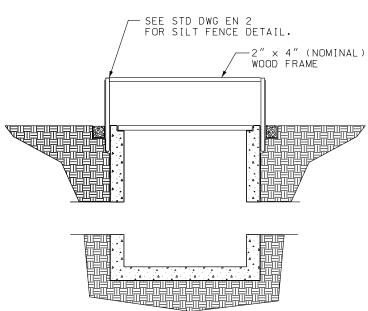
NOTES:

- 1. KEY-IN BALES IN AN EXCAVATED TRENCH AROUND THE PERIMETER OF THE DROP INLET STRUCTURE THAT IS 6" DEEP BY A BALES WIDTH WIDE.
- 2. OVERLAP ON CORNERS MUST BE AT LEAST HALF A BALE WIDE.
- 3. DEPENDING ON THE SIZE OF THE INLET STRUCTURE, MORE BALES THAN SHOWN MAY BE REQUIRED.
- 4. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOPS OF THE BALES ARE NOT HIGHER THAN THE ADJACENT ROADWAY.
- 5. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
- 6. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

SILT FENCE DROP-INLET BARRIER



PLAN VIEW

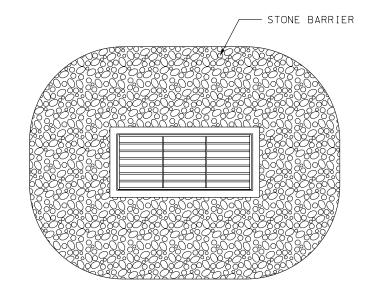


NOTES:

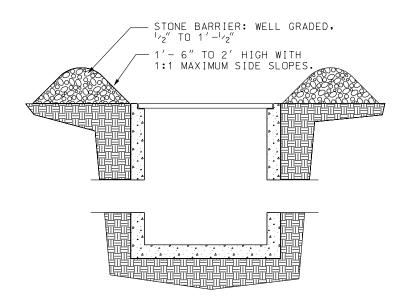
SECTION

- 1. EXCAVATE A TRENCH AROUND THE CORNER THE PERIMETER OF THE DROP-INLET THAT IS 6" DEEP AND 4" WIDE.
- 2. DRIVE POSTS AT EACH CORNER OF THE INLET STRUCTURE. IF THE DISTANCE BETWEEN CORNER POSTS EXCEEDS 4', PLACE ANOTHER POST(S) BETWEEN THEM.
- 3. CONNECT THE TOPS OF ALL THE POSTS WITH A WOODEN SUPPORT FRAME MADE OF 2" BY 4" BOARDS. USE NAILS OR SCREWS
- 4. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE SILT FENCE IS NOT HIGHER THAN THE ADJACENT ROADWAY.
- 5. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
- 6. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

STONE DROP-INLET BARRIER



PLAN VIEW



SECTION

NOTES:

- 1. PLACE STONE BARRIER AS SHOWN AROUND THE INLET OPENING.
- 2. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE STONE BARRIER IS NOT HIGHER THAN THE ADJACENT ROADWAY.
- 3. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
- 4. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

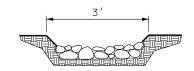
TRANSPORTATION AD BRIDGE CONSTRUCTION P DEPARTMENT UTAH ORARY N CONTROL ET BARRIERS

TEMPOR EROSION ((DROP-INLET

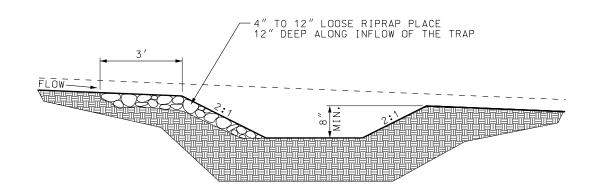
STD DWG

EN 4

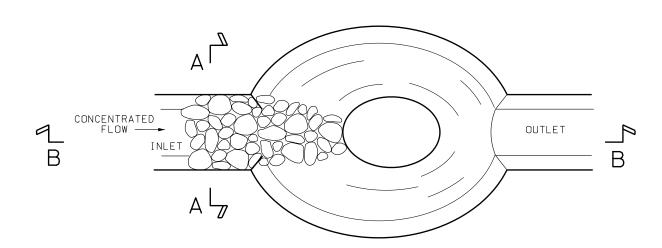
SEDIMENT TRAP



SECTION A-A



SECTION B-B



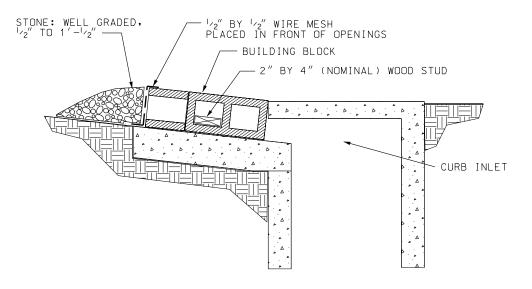
NOTES

- 1. PLACE SEDIMENT TRAPS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- 2. THE STORAGE CAPACITY OF EACH SEDIMENT TRAP WILL BE IDENTIFIED IN THE PROJECT PLAN SET.

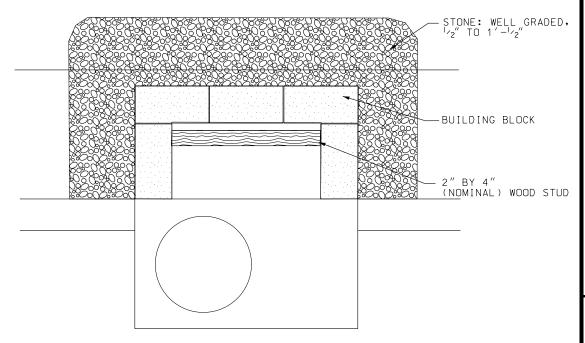
PLAN VIEW

- 3. CONSTRUCT TRAP LENGTH TWICE AS LONG AS THE WIDTH.
- 4. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT TRAP THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE BASIN HAVE BEEN PAVED OR VEGETATED.
- 5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

CURB INLET BARRIER



SECTION



PLAN VIEW

NOTES.

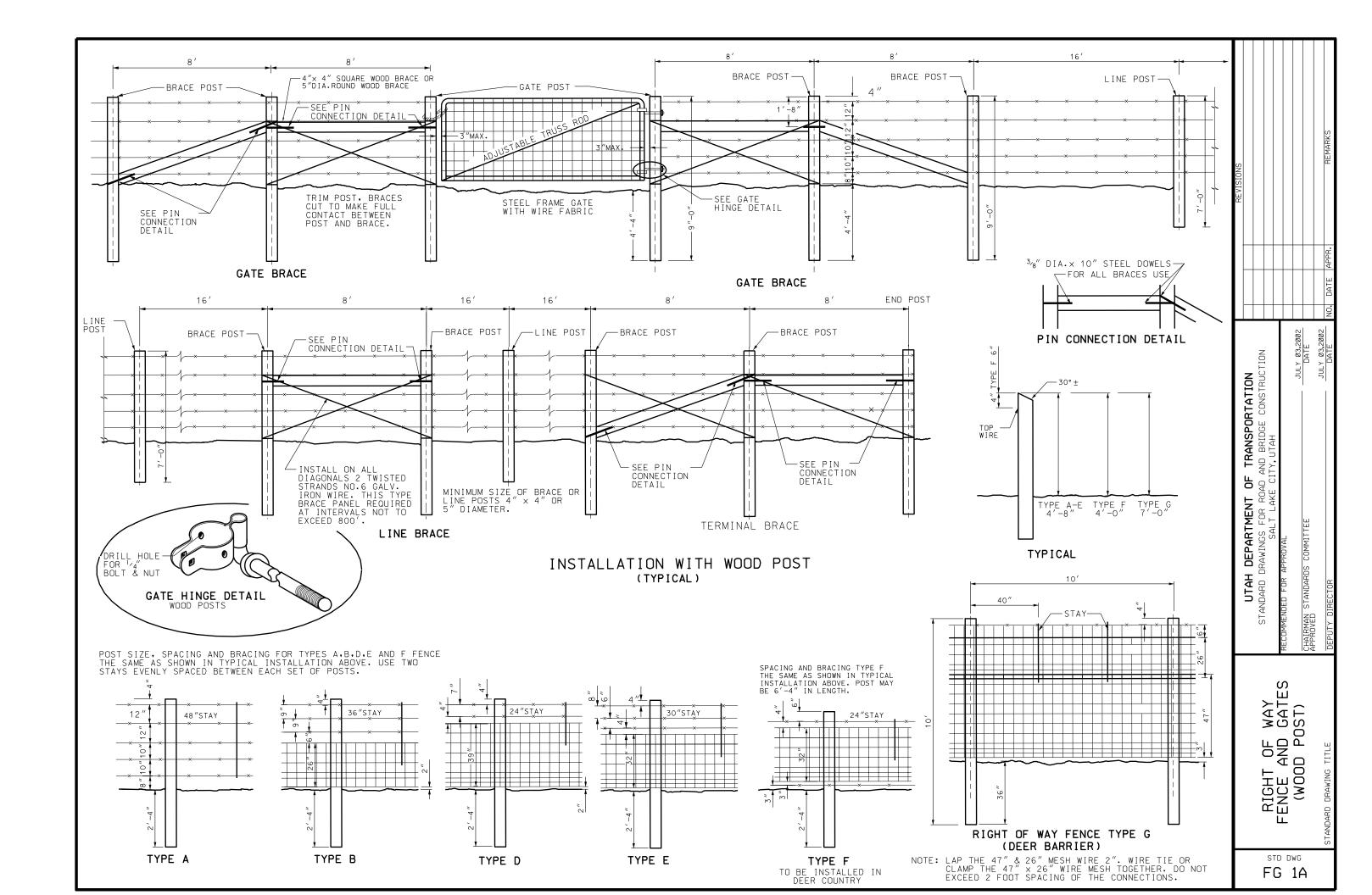
- 1. PLACE BUILDING BLOCKS, WIRE MESH AND STONE AS SHOWN AROUND THE CURB INLETS.
- 2. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
- 3. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

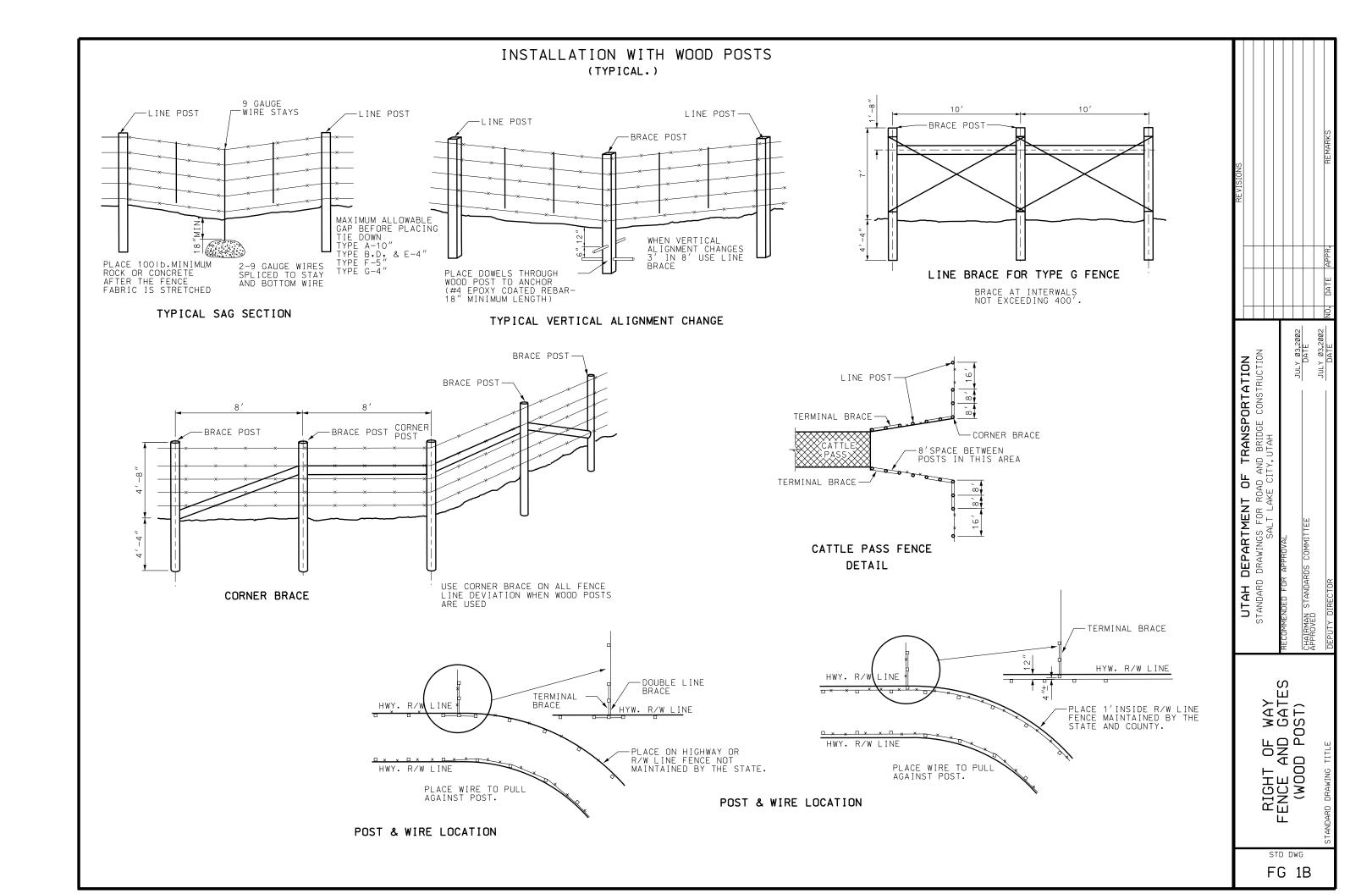
TRANSPORTATION AND BRIDGE CONSTRUCTION TY, UTAH Н DEPARTMENT UTAH

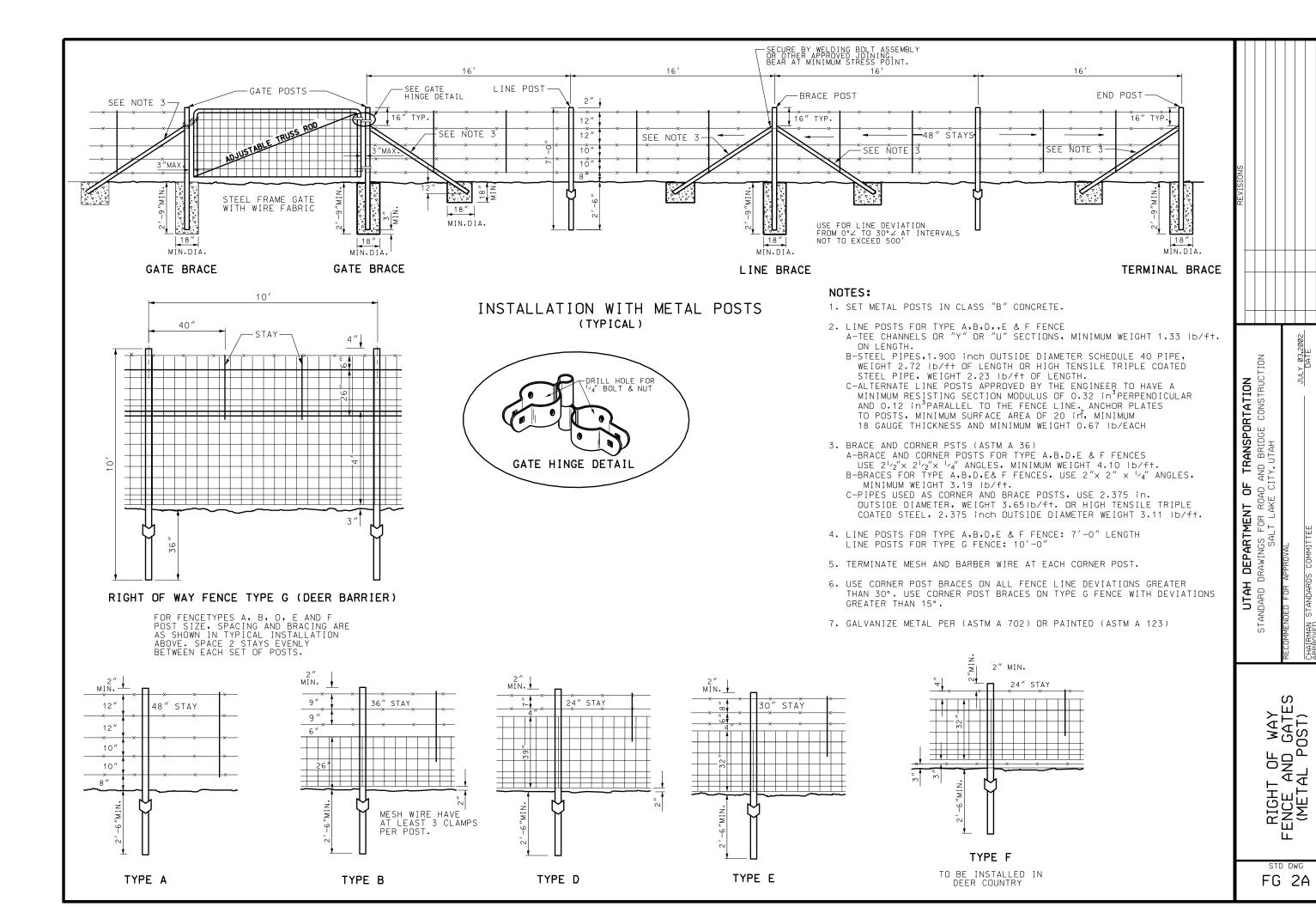
TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND CURB INLET BARRIER)

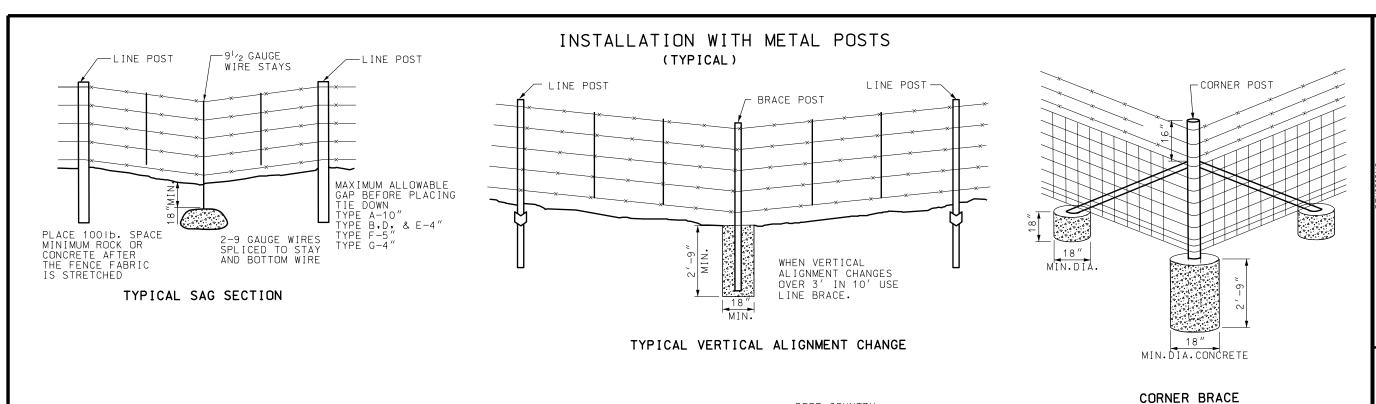
STD DWG

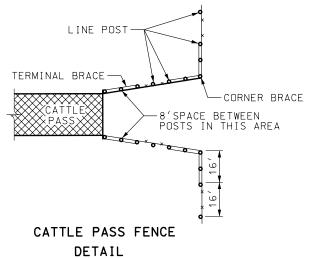
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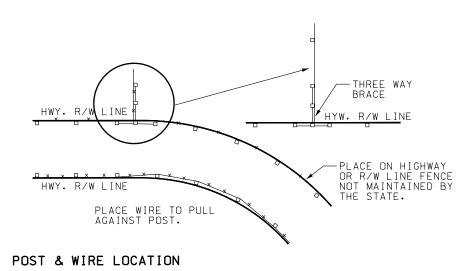


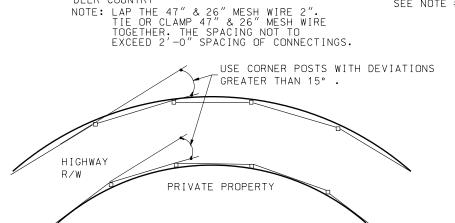






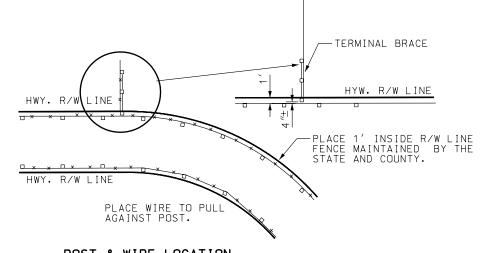






DEER COUNTRY

DEER BARRIER ON CURVES SEE NOTE #6 STD DWG FG 2A



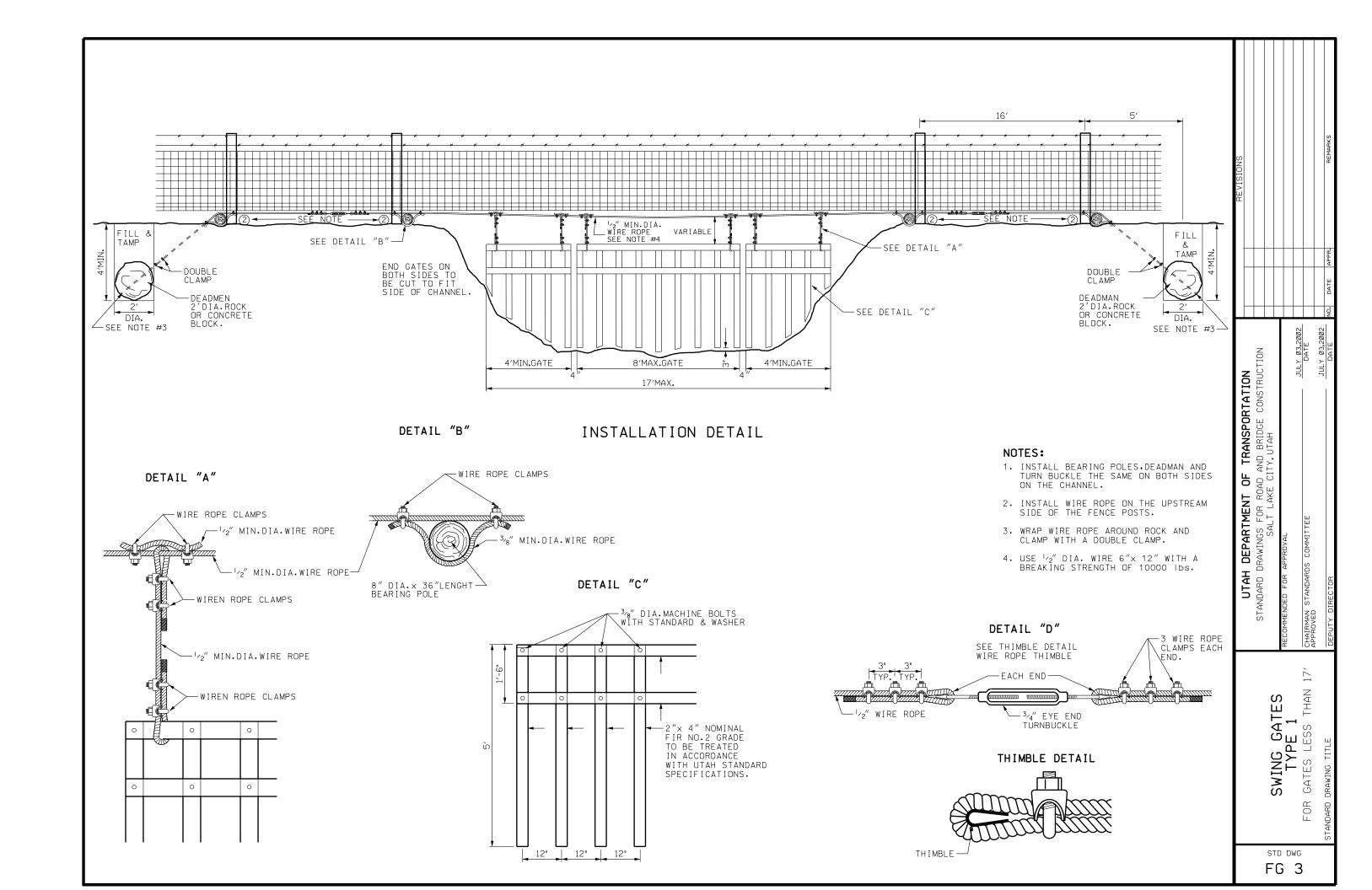
SEE NOTE #6 STD DWG FG 2A

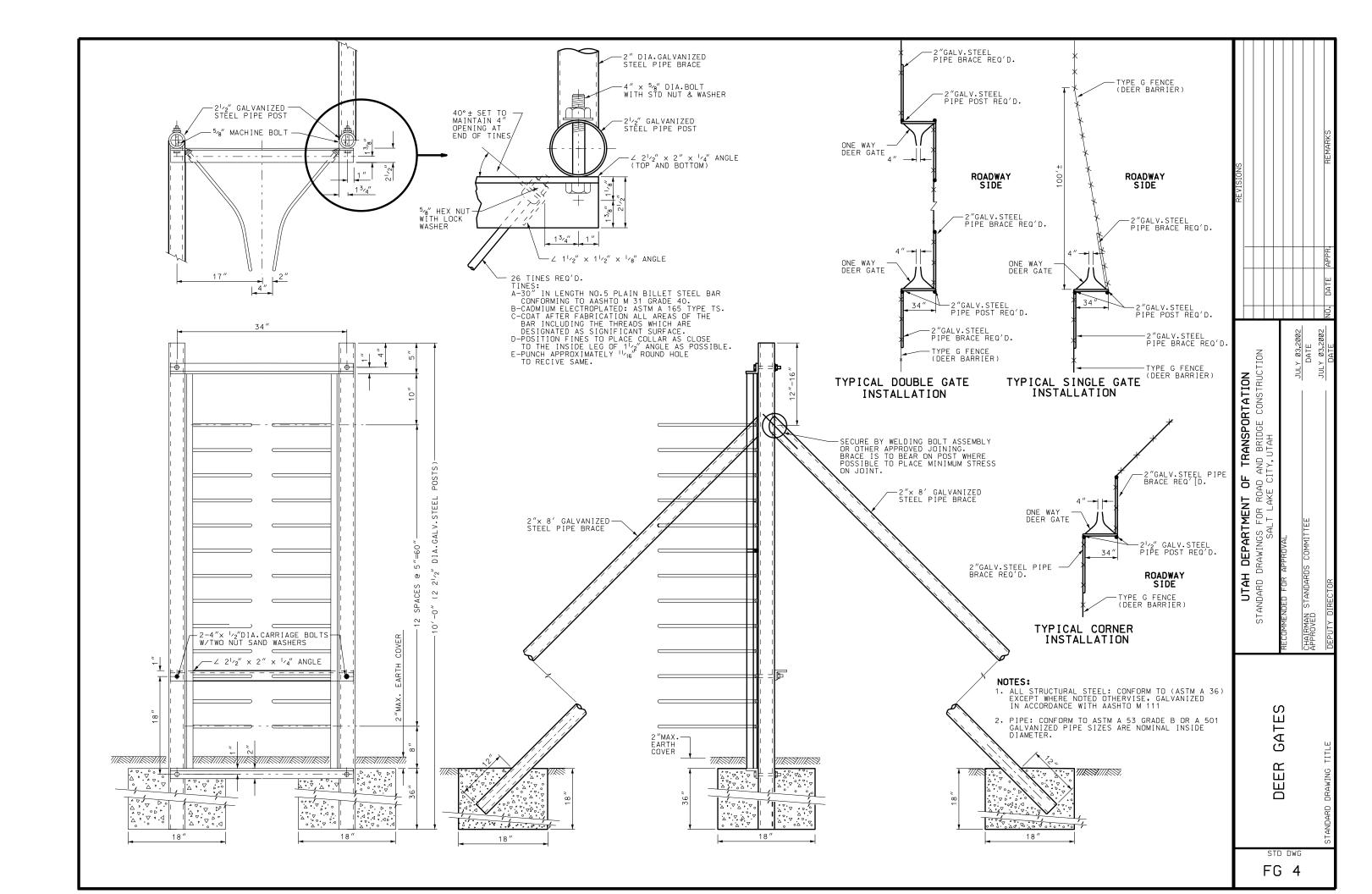
POST & WIRE LOCATION

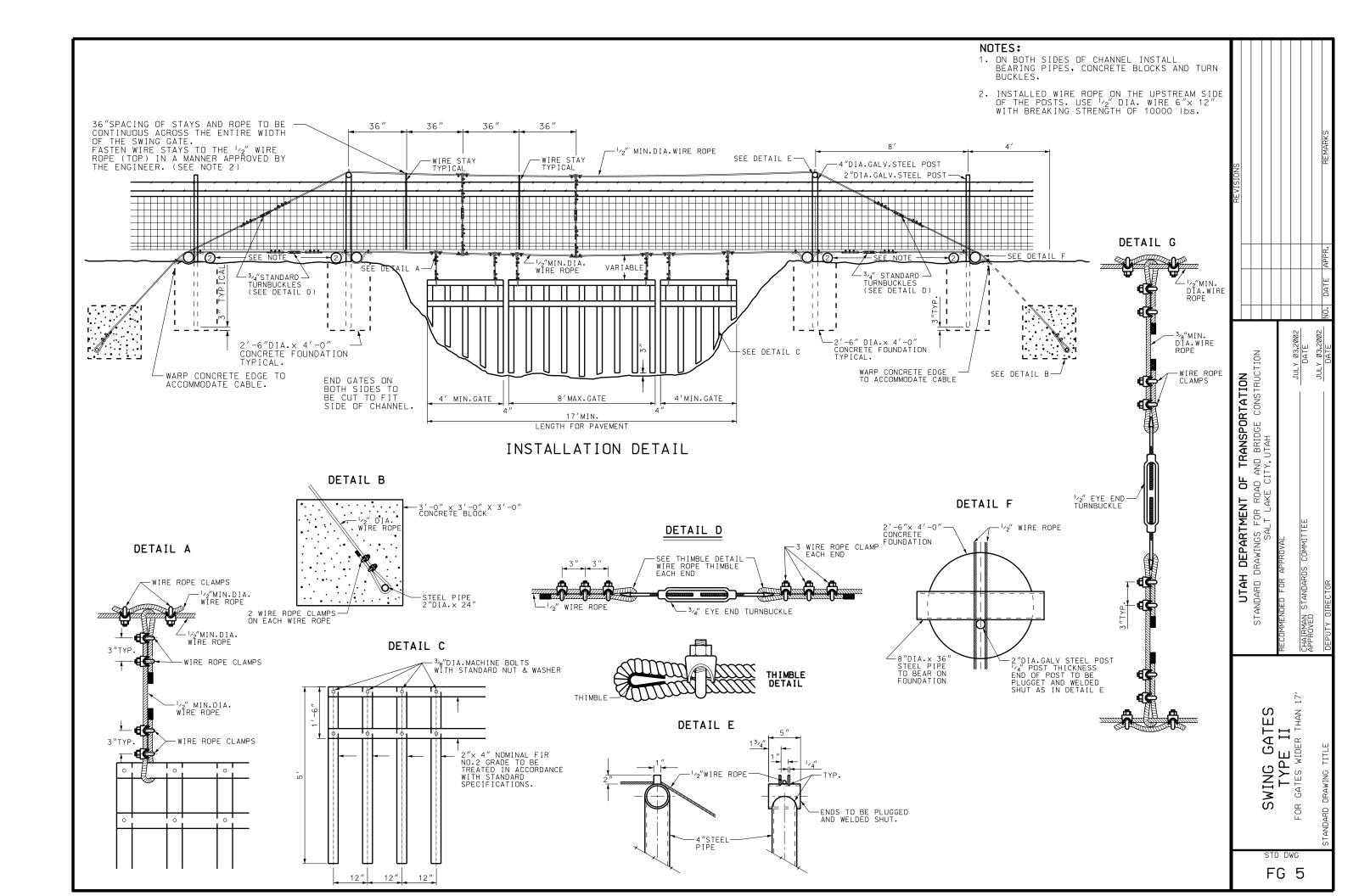
UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for road and bridge construction Salt lake City, Utah RIGHT OF WAY FENCE AND GATES (METAL POST) ш

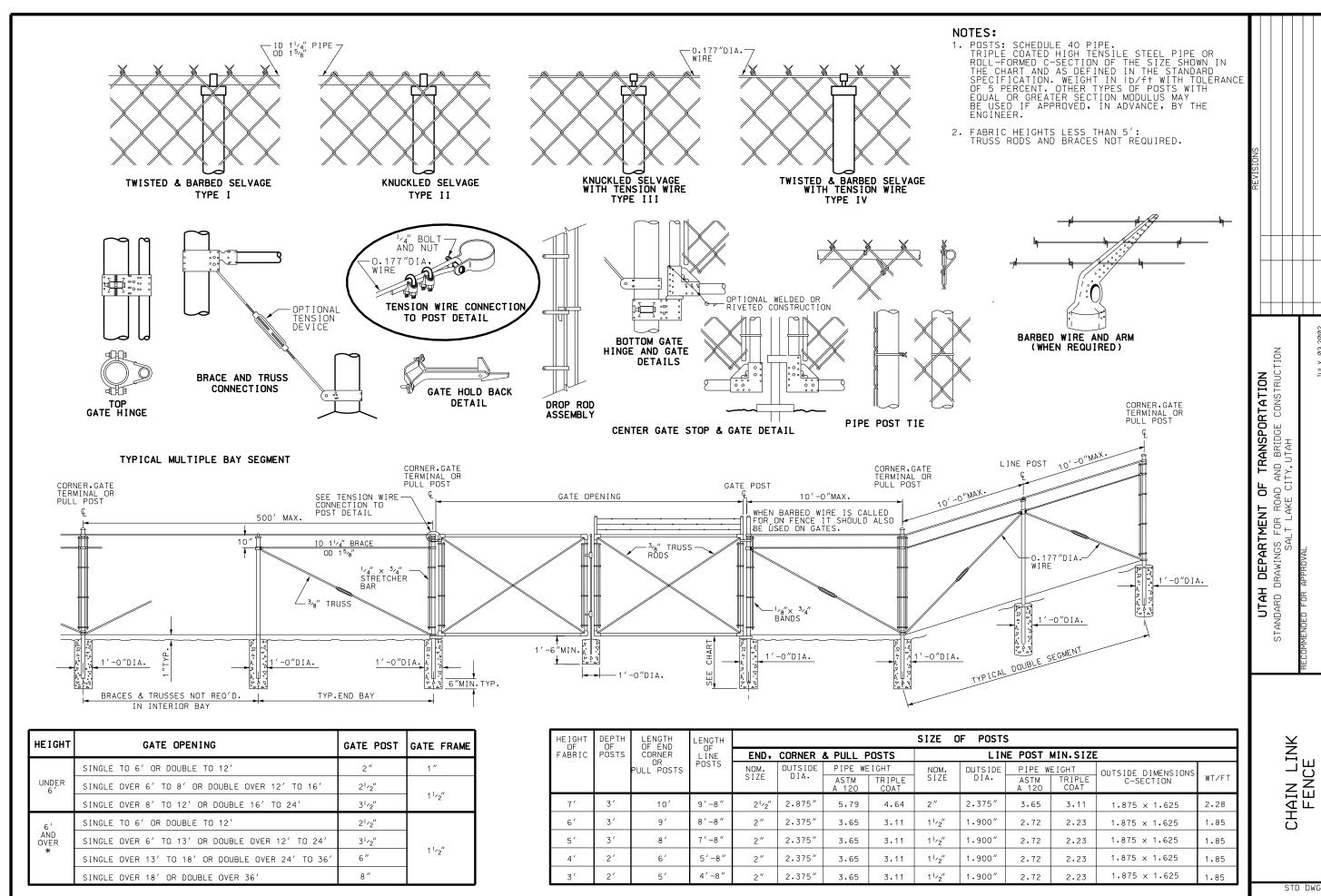
STD DWG

FG 2B





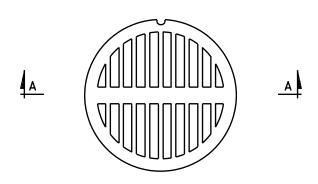


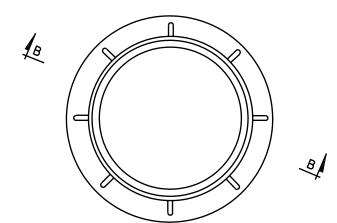


* GATES OVER 6' IN HEIGHT AND WIDER THAN 12' WILL REQUIRE

3 INDUSTRIAL PRESSED STEEL HINGES.

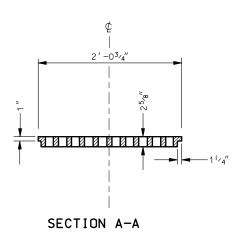
FG 6

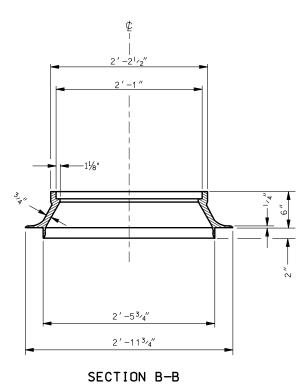


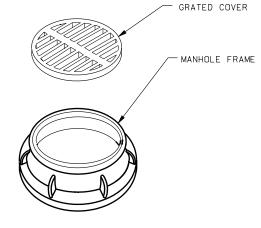


GRATED COVER PLAN









NOTES:

- 1. MANHOLE FRAME AND COVER FURNISHED IN CAST GRAY IRON CONFORMING TO AASHTO DESIGNATION M 105, CLASS 30B.
- 2. USE PRECAST CONCRETE GRADE RINGS TO ACHIVE FUNISH GRADE ELEVATION, PRECAST GRADE ARE FURNISHED IN HEIGHTS OF 4", 6" AND 8", TOTAL HEIGHT OF GRADE RINGS NOT TO EXCEED 1'-0". CONFORM ALL PRECAST GRADE RINGS TO AASHTO DESIGNATION M 199.
- 3. DIMENSION OF GRATE OPENINGS MAY VARY AMONG MANUFACTURES. SUBMIT SHOP DRAWING FOR APPROVAL PRIOR TO INSTALLATION.
- 4. ESTIMATED WEIGHT OF FRAME AND COVER 385 LBS.

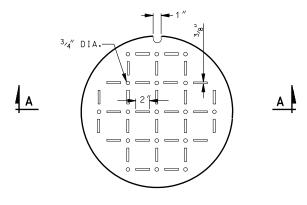
DESIGN DATA

MS 18 (HS 20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

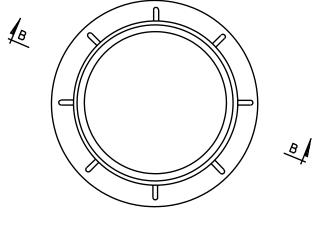
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ID COVER	,	JULY 03,2002				
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		JULY 03.2002				
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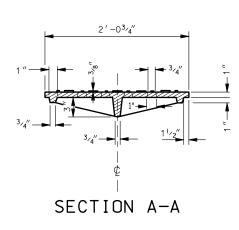
GF 1

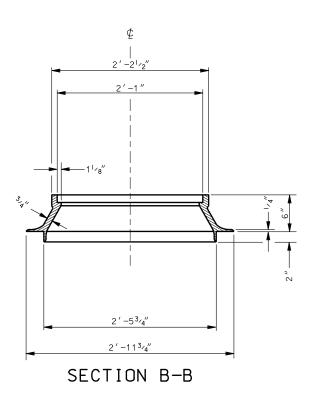


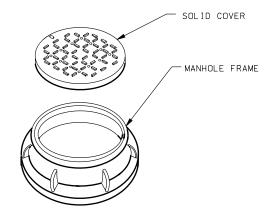
SOLID COVER PLAN











NOTES:

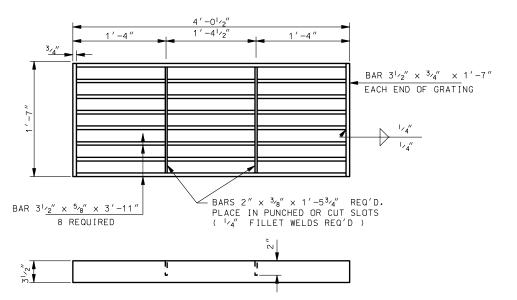
- 1. FURNISH MANHOLE FRAME AND COVER IN CAST GRAY IRON CONFORMING WITH AASHTO DESIGNATION M 105, CLASS 30B.
- 2. USE PRECAST CONCRETE GRADE RINGS TO ACHIEVE FINISH GRADE ELEVATION, PRECAST GRADE RING ARE FURNISHED IN HEIGHTS OF 4".6" AND 8".
 TOTAL HEIGHT OF GRADE RINGS NOT TO EXCEED 1'-0". ALL PRECAST GRADE RINGS CONFORM WITH AASHTO DESIGNATION M 199.
- 3. ESTIMATED WEIGHT OF FRAME AND COVER 402 LBS.

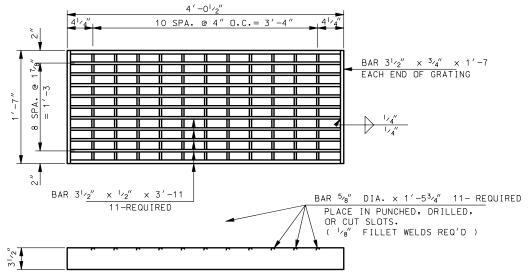
DESIGN DATA

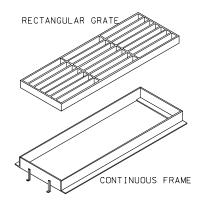
MS-18 (HS-20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	
	SALT LAKE CITY, UTAH	
MAINTOLE FRAME AIND	KECUMMENDED FOR APPROVAL	
SOLID COVER	JULY 03,2002	
	CHAIRMAN STANDARDS COMMITTEE	
	JULY 03.2002	
STANDARD DRAWING TITLE	DEPUTY DIRECTOR DATE	NO. DATE APPR.

STD DWG

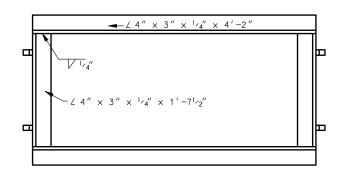


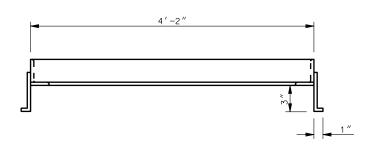


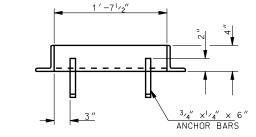


STANDARD GRATING
GRATE WEIGHT: 272 LBS

BICYCLE-SAFE GRATING
GRATE WEIGHT: 297 LBS







FRAME
FRAME WEIGHT: 68 LBS

- 1. HOT-DIP GALVANIZE GRATING AND FRAME AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M 111 (ASTM A 123).
- 2. STRUCTURAL STEEL GRATING: USE STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36 (ASTM A 709 GRADE 36).
- 3. SEE ROADWAY PLANS FOR TYPE OF GRATE REQUIRED.
- 4. ALL JOINTS REQUIRE 1/4" FILLET WELDS UNLESS NOTED OTHERWISE.

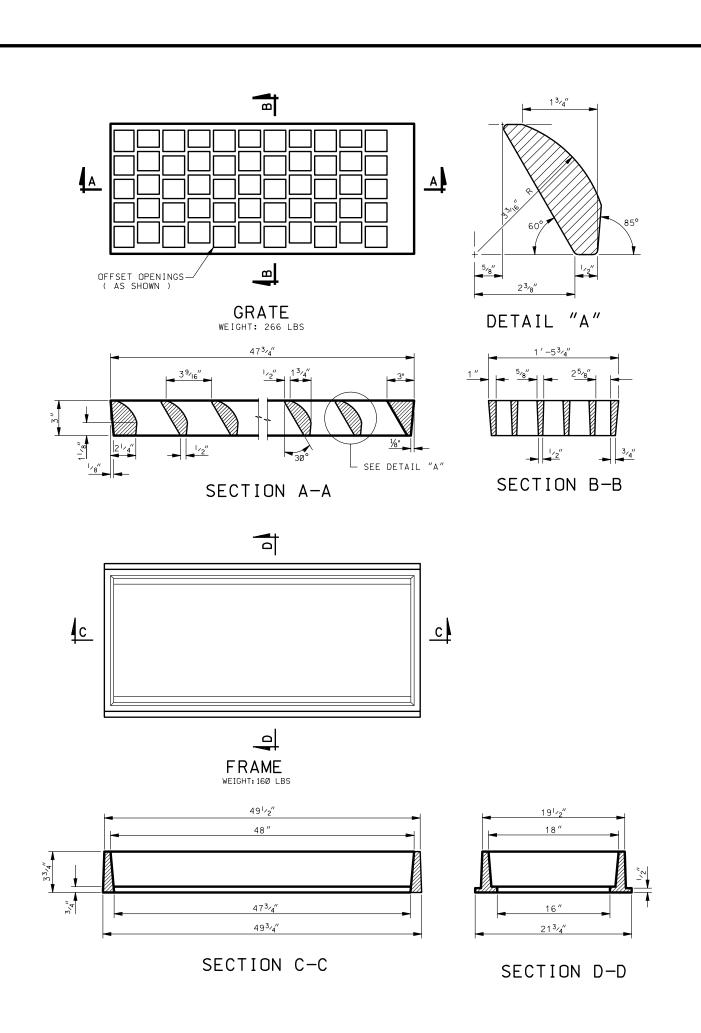
DESIGN DATA

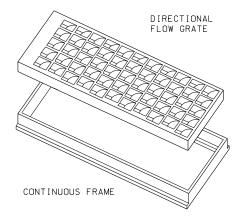
MS 18 (HS-20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT ASSHTO AND INTERIM SPECIFICATIONS.

STRUCTURAL STEEL: fs = 20,000 psi

RECTANGULAR GRATE & FRAME	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE JULY 03 JULY 03	JON JULY 83,2802 DATE JULY 83,2802			NEVIOLES A
HANDAKD DKAWING TILE	DEPUTY DIRECTOR	DATE NO. DATE APPR.	DATE	APPR.	REMARKS

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- 1. FURNISH GRATE AND FRAME IN EITHER DUCTILE IRON (ASTM A 536 GRADE 60) OR CAST GRAY IRON: AASHTO M 105, CLASS 30B (ASTM A 48).
- 2. INSTALLATION REQUIRES SUPPORT UNDER LONGITUDINAL AXIS OF FRAME, ORIENT GRADE WITH DIRECTION OF FLOW.

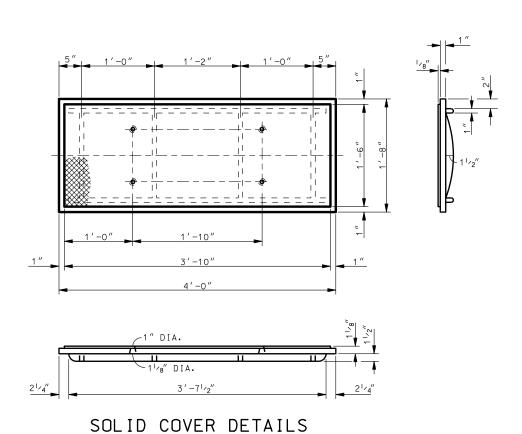
DESIGN DATA

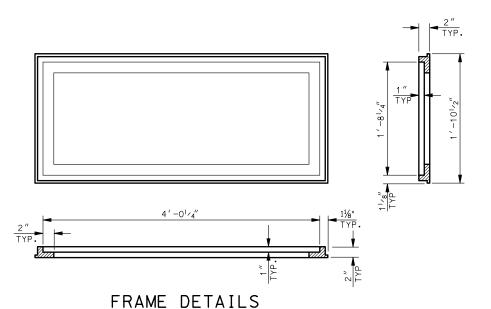
MS 18 ($\mbox{HS-20}$) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASTO AND INTERIM SPECIFICATIONS.

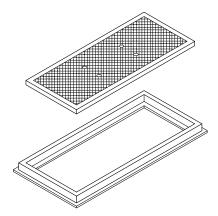
DUCTILE IRON AND STRUCTURAL STEEL: fs = 20,000 psi

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	7	JULY 03,2002			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		ULY 03,2002			
'ANDARD DRAWING TITLE	DEPUTY DIRECTOR	i	NO. DATE APPR.	APPR.	REMARKS

STD DWG







- 1. FURNISH SOLID COVER AND FRAME IN EITHER DUCTILE IRON (ASTM A 536, GRADE 60) OR CAST GRAY IRON: AASHTO M 105, CLASS 30B (ASTM A 48)
- 2. INSTALLATION REQUIRES SUPPORT UNDER LONGITUDINAL AXIS OF FRAME, ORIENT GRATE WITH DIRECTION OF FLOW.

DESIGN DATA

MS 18 (HS-20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

DUCTILE IRON AND STRUCTURAL STEEL: Fs = 20,000 psi

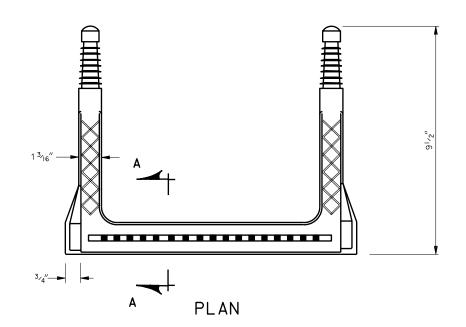
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STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL	JULY 03,2002	STANDARDS COMMITTEE	7007.5007	DEPUTY DIRECTOR DATE
		SOLID COVER & FRAME RECOMMENDED FOR APPI				STANDARD DRAWING TITLE

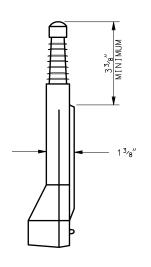
STD DWG

TRANSPORTATION

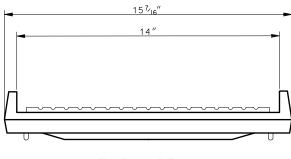
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UTAH DEPARTMENT

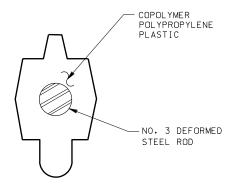




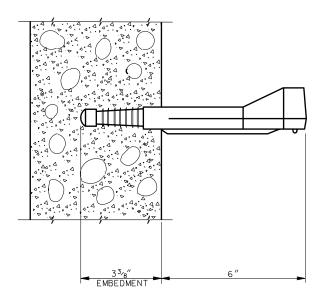




END VIEW



SECTION A-A

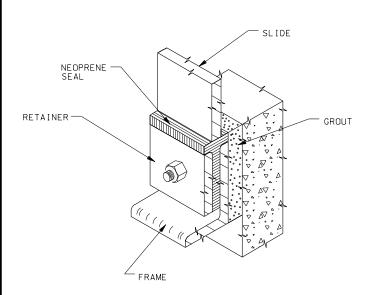


EMBEDMENT DETAIL

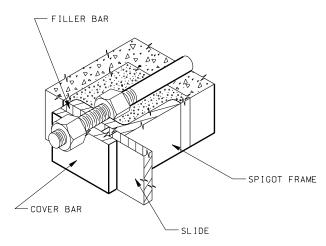
- 1. MANHOLE STEPS: CAPABLE OF WITHSTANDING A SINGLE CONCENTRATED LOAD OF 300 POUNDS APPLIED AT A DISTANCE OF 5 INCHES FROM THE FACE OF THE STRUCTURE WALL.
- 2. STEPS ARE TO BE VERTICALLY ALIGNED AND UNIFORMLY SPACED WITH A MINIMUM SPACING OF 12 INCHES AND A MAXIMUM SPACING OF 16 INCHES UNLESS SHOWN OTHERWISE ON STRUCTURE PLANS.
- 3. USE EITHER MANHOLE STEPS CAST-IN-PLACE, OR GROUTED INTO STRUCTURE WALL IN SUCH A MANNER AS TO PREVENT PULLOUT UNDER A LOAD OF 300 POUNDS APPLIED 5 INCHES FROM THE FACE OF THE STRUCTURE WALL.
- 4. STEEL REINFORCING OF MANHOLE STEPS: CONFORM TO AASHTO DESIGNATION M 31, GRADE 60, DEFORMED STEEL BAR. PLASTIC COATING OF MANHOLE STEPS: CONFORM TO ASTM DESIGNATION D 2146, TYPE II, GRADE 16906.
- 5. MANHOLE STEPS: CONFORM TO AASHTO DESIGNATION M 199 UNLESS NOTED OTHERWISE.6. DIMENSIONS MAY VARY WITH MANUFACTURES DESIGN. USE ALTERNATIVE DESIGN WITH THE APPROVAL OF THE ENGINEER.

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NOTIFICATION OF THE TOTAL TO THE TOTAL TOTAL TO THE TOTAL TO	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL	JULY 03,2002	CHAIRMAN STANDARDS COMMITTEE DATE	JULY 03.2002	DEPUTY DIRECTOR DATE	
		9		MANHOLE SIEPS	\ (G)			STANDARD DRAWING TITLE	

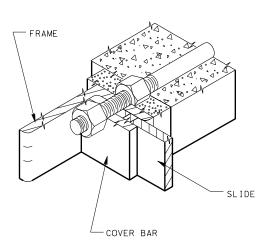
GF 6



FLUSH BOTTOM CLOSURE



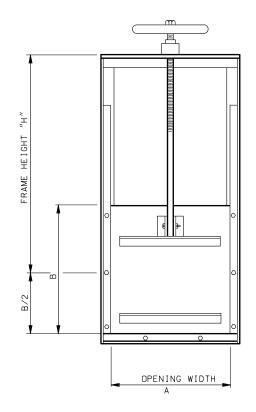
SPIGOT BACK MOUNTING



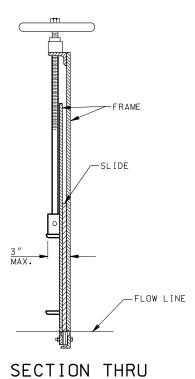
FLAT BACK MOUNTING

STA	NDARD	SCREW	GATE	SIZES	FOR	5 FEE	T OF	HEAD	OR LES	SS	
12	15	18	21	24	30	36	42	48	54	60	72
12	12	12	21	12	18	24	24	24	30	30	36
15	15	18		18	24	30	30	30	36	36	42
18	18	24		24	30	36	36	36	42	42	48
24	24	30		30	36	42	42	42	48	48	54
	30	36		36	42	48	48	48	54	54	60
				42	48	54	54	54	60	60	72
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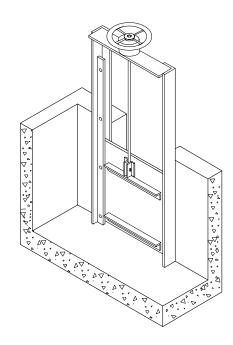
- * FRAME HEIGHTS ARE AVAILABLE IN 1 FOOT INCREMENTS UP TO 10 FEET.
- * OPENING SIZE : A X B



FRONT ELEVATION



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ISOMETRIC VIEW

NOTES:

- 1. DESIGN SCREW GATES AND FRAMES FOR A MINIMUM FACE PRESSURE EQUAL TO 5 FEET OF HEAD ABOVE THE GATE OPENING AND ZERO BACK PRESSURE. SCREW GATES ARE INTENDED FOR A MAXIMUM OPENING SIZE OF 6 FT.× 6 FT.
- 2. CONSTRUCT SCREW GATE AND FRAME WITH CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 183, GRADE 36, OPTIONAL GALVANIZING IN ACCORDANCE WITH AASHTO SPECIFICATION M 111.
- 3. MOUNT FRAME USING EITHER FLAT BACK OR SPIGOT BACK DETAILS DEPENDING ON CONDITIONS.
- 4. SUBMIT, IN ALL CASES, SHOP DRAWINGS FOR APPROVAL. SIMILAR SCREW GATES AND FRAMES CAN BE USED SUBJECT TO THE APPROVAL OF SHOP DRAWINGS.
- 5. SEE MANUFACTURES DETAILS FOR FRAME SIZES, AND PLACEMENT OF MOUNTING BOLTS.

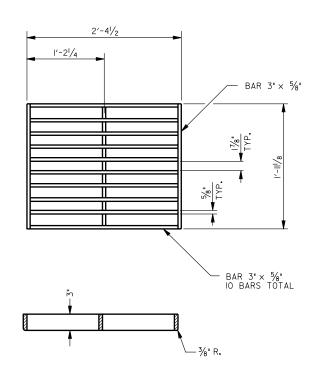
DESIGN DATA

STRUCTURAL STEEL: fs = 20, 000 PSI DESIGN SEATING HEAD: 0-5 FT.

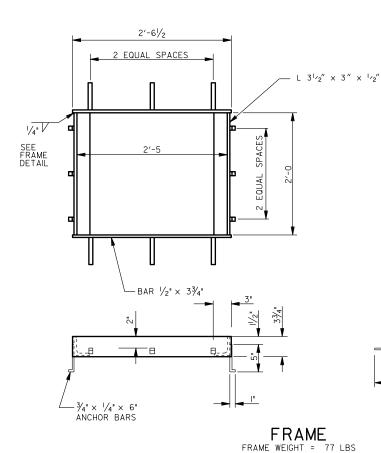
REVISIONS						02		002	NO. DATE APPR. REMARKS
	NOTIFIED DEPORTMENT OF TRANSPORTED FOR	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		RECOMMENDED FOR APPROVAL	JULY 03,2002	CHAIRMAN STANDARDS COMMITTEE DATE	3002.ED 7JULY 03.2002	DEPUTY DIRECTOR DATE
				SIANDARD SCREW	CATE & FRAME	מן היים א חיים א			ANDARD DRAWING TITLE

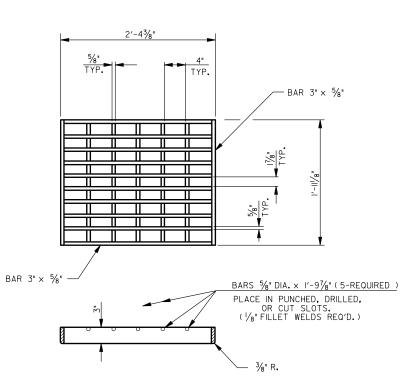
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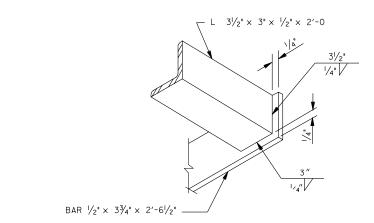


STANDARD GRATE GRATE WEIGHT = 179 LBS.

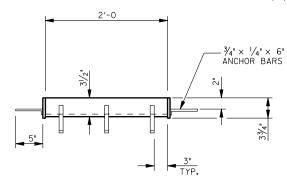


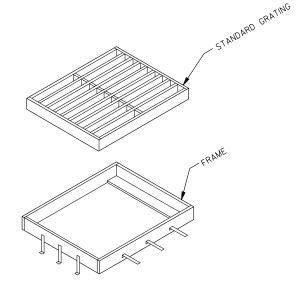


BICYCLE-SAFE GRATE GRATE WEIGHT = 179 LBS.



FRAME DETAIL





NOTES:

- 1. HOT-DIP GALVANIZE THE GRATING AND FRAME AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M 111.
- 2. USE STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 270 GRADE 36 FOR STRUCTURAL STEEL GRATING.
- 3. SEE ROADWAY PLANS FOR LOCATION AND NUMBER OF GRATES REQUIRED.
- 4. WELD ALL JOINTS WITH A $\frac{1}{4}$ FILLET WELD UNLESS NOTED OTHERWISE.

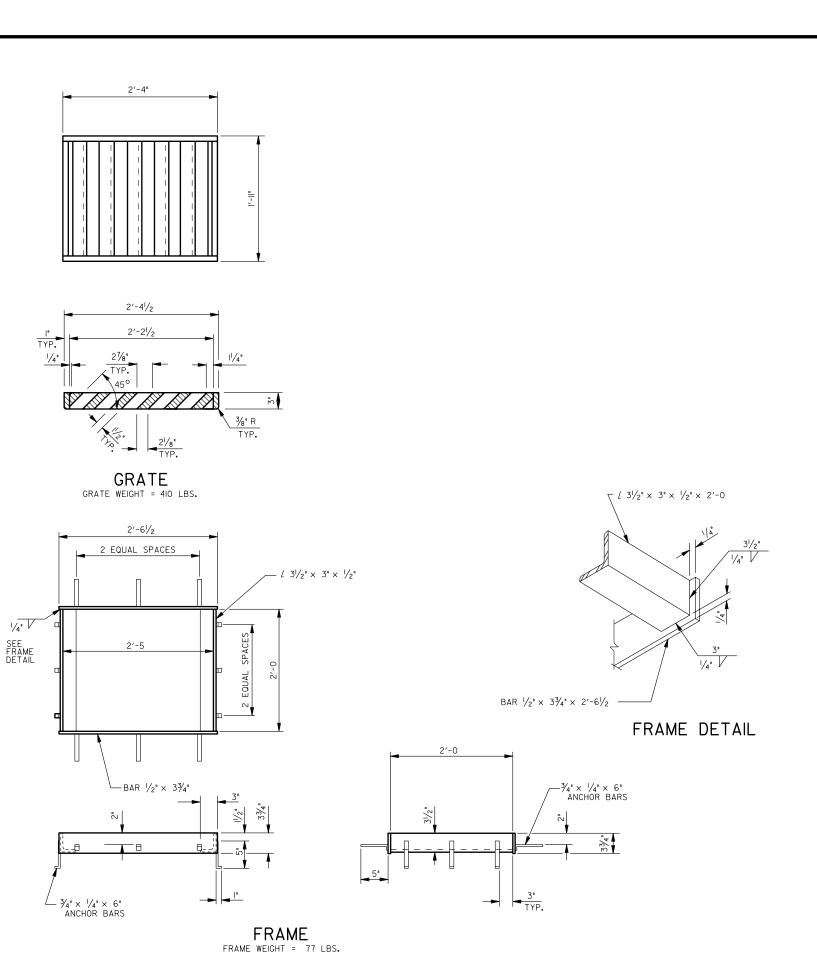
DESIGN DATA

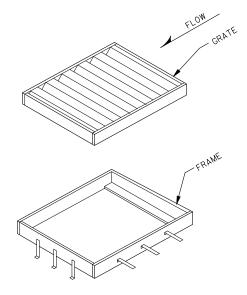
GRATE AND FRAME: MEET HS-20 OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH AASHTO SPECIFICATIONS WHICH ARE IN EFFECT AT DATE OF REQUEST FOR BIDS.

STRUCTURAL STEEL: Fs=20,000psi

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	RECOMMENDED FOR APPROVAL				
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	CHAIRMAN STANDARDS COMMITTEE	DATE			
		JULY 03.2002			
ANDARD DRAWING TITLE	DEPUTY DIRECTOR		NO. DATE APPR.	APPR	REMARKS

STD DWG





- 1. HOT-DIP GALVANIZE GRATING AND FRAME AFTER FABRICATION IN ACCORDANCE WITH AASHTO DESIGNATION M 111.
- 2. USE STRUCTURAL CARBON STEEL CONFORMING TO AASHTO DESIGNATION M 270, GRADE 36 FOR STRUCTURAL STEEL GRATING.
- 3. SEE ROADWAY PLANS FOR LOCATION AND NUMBER OF GRATES REQUIRED.
- 4. WELD ALL JOINTS WITH A 1/4" FILLET WELD UNLESS NOTED OTHERWISE.
- 5. ORIENT GRATE WITH DIRECTION OF FLOW.

DESIGN DATA

GRATE AND FRAME: MEET HS 20-44 LOADING OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH AASHTO SPECIFICATIONS WHICH ARE IN EFFECT AT DATE OF REQUEST FOR BIDS.

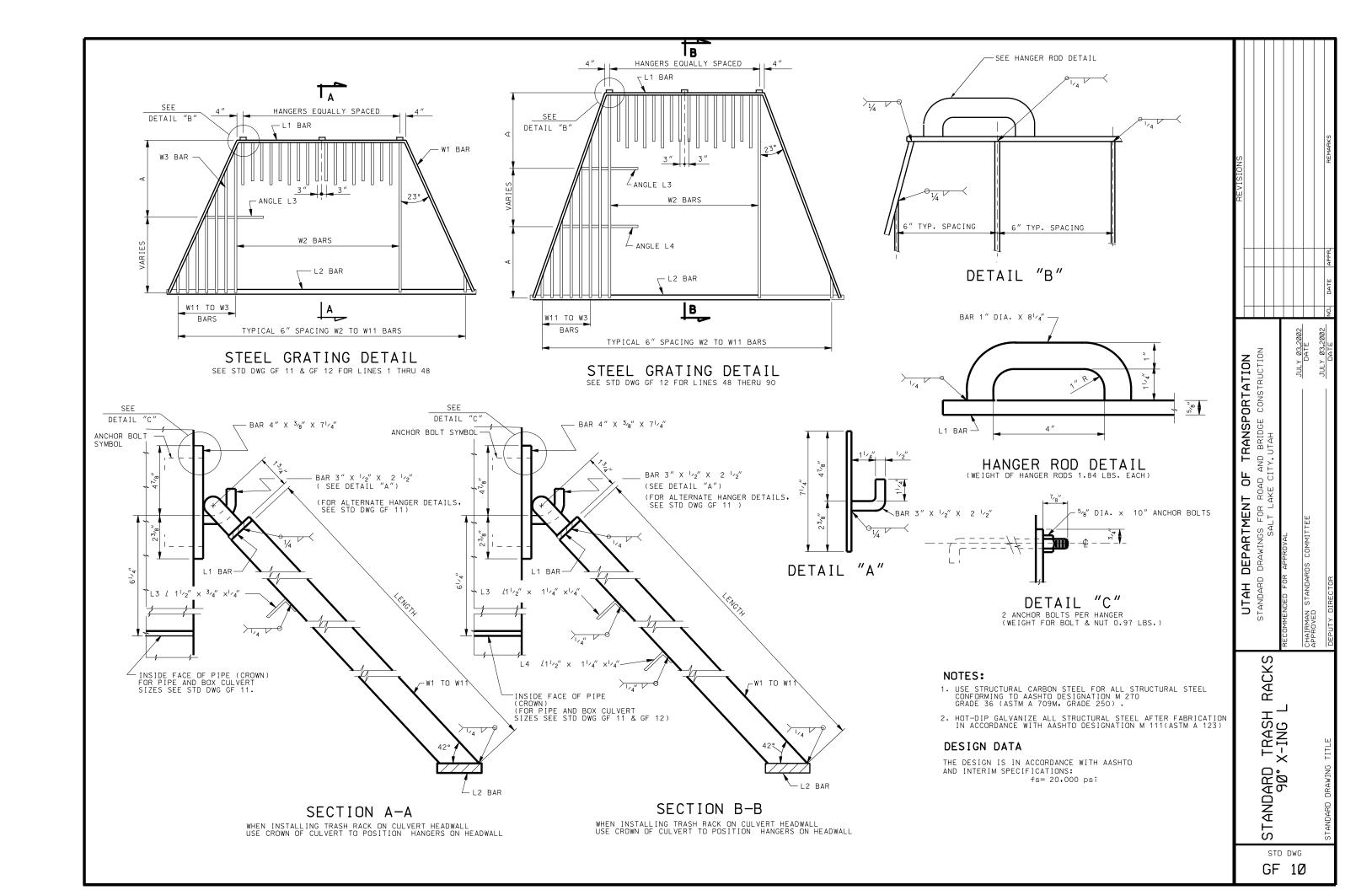
STRUCTURAL STEEL: Fs=24,000psi

	NOITH TOO CONTACT TO THE PROPERTY OF THE PROPE				REVISIONS
	UIAH DEPAKIMENI OF IKANSPOKIAIION				
:	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	NOI.			
-42	SALT LAKE CITY, UTAH				
i					
IAL FLOW	RECOMMENDED FOR APPROVAL				
ח הסאתר	TNF	JULY 03,2002			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		7 M3.2002			
щ	DEPUTY DIRECTOR		NO. DATE APPR.	APPR.	REMARKS

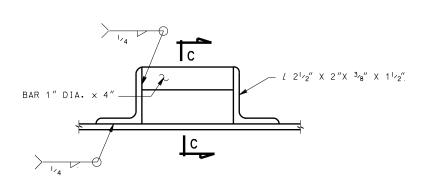
28" × 24" DIRECTIONAL FL GRATE AND FRA

STD DWG

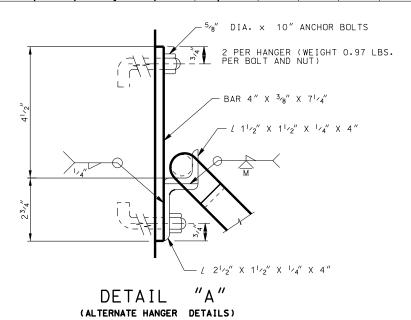
GF 9

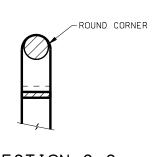


	TO	BE	USED F	OR (NOM.SI	ZE)				TRAN	SVERSE	BARS										MAIN	I BARS	;					NO. OF	
	Ş	TED IPES	ТЕD	TE	-PLATE PSES	I-PLATE ARCHES				1- E	ACH RE	QUIRE	D			2- EACH	¥0				2-E	ACH F	REQUIF	RED			W1 TO	W11	AND HANGER	STRUCT.
LINE	BOX VERTS	RUGAT	CORRUGATED PIPE ARCHES	CONCRETE PIPE		TI-P E AR	А		L1			L2		L3	L4	W1	W2	W3	W4	W 5	W6	W7	W8	W9	W10	W11	WITO	WII	RODS (SPACED EQUALLY	
	CUL	COR	COF PIP	CO	MUL	MULT] PIPE		LENGTH	THICKNES	S WIDTH	LENGTH	THICKNESS	WIDTH	LENGTH	LENGT	LENGTH	LENGTH NO.	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	THICKNE	SSWIDT		LBS.
1		18"	29" X 18"	18"			1′-5	1′-5	1,4"	11/4"	3'-11 ³ / ₄ "	1/2"	1 ⁵ /8"	2′-8	0	3'-23/4"	2'-11 ⁵ /8' 2	2'-101/8"	1'-81/8"	0'-61/8"							1/4"	11/4"	2	55.8
2							1′-5	2'-4	A	A	4'-10 ⁵ /8"	4	A	3'-7	A	3'-23/4"	2'-11 ⁵ /8' 4	2'-9"		0'-5"							A	A	1	67.5
3		21"		21"			1′-7	1′-8			4'-61/2"			3′-1		3'-71/8"	3'-41/8" 4	2'-41/4"	1'-21/4"											64.5
4		24"		24"			1'-10	1′11			5'-11/4"			3′-6		4'-01/8"	3'-85/8" 4	3'-01/4"	1'-101/4"											74.5
5			36" × 22"				1'-10	2'-11			5'-10 ³ / ₄ "			4′-6		3'-91/4"	3′-5 ³ / ₈ ″ 6	2'-91/4"												84.4
6			"	27"			2'-0	2'-2			5'-81/8"			3'-11		4'-51/2"	4'-11/8" 4	3'-81/4"	2'-61/4"		0' 01."									84.4
(43" × 27" 50" × 31"				2'-0	3'-6			7'-01/8" 8'-03/8"			5′-3 6′-0		4'-5' ₂ " 5'-0"	4'-1' ₈ " 6	4'-01/8"	2'-107/8"	1'-8'/8"										105.7
°	24" X 24"		50 X 31				1'-10	4'-1 1'-11			5'-13/8"			3'-6		5 -0 4'-0'/8"	$4'-7' \times 4'' = 8$ $3'-8^3 \times 8'' = 4$	3'-01/4"	1'-101/4"		01									125.9 74.5
10	24 X 24	30"		30"			2'-2	2'-5			6'-3"			4'-4		$4' - 10^{3}/8''$	4'-53/8" 4	4'-41/4"			0'-1014"									96.2
11	36" X 24"	30		30		 	1'-10	2'-11			6'-1 ³ / ₈ "			4'-6		4'-01/2"	3'-8 ³ / ₈ " 6	3'-01/4"			0 -10-74			1				+		89.0
	48" X 24"						1'-10	3'-11			7'-13/8"			5'-6		4'-01/2"	3'-8 ³ / ₈ " 8		1'-10'/4"											103.6
	60" X 24"						1'-10	4'-11			8'-13/8"			6'-6		4'-01/2"		3'-01/4"											1 +	118.1
14	72" X 24"						1'-10	5'-11			9'-13/8"			7'-6		4'-01/2"	3'-8 ³ / ₈ " 12	3'-01/4"	1'-101/4"										2	132.7
15	84" X 24"						1'-10	6'-11			10'-13/8"			8'-6		4'-01/2"	3'-8 ³ / ₈ " 14	3'-01/4"											3	153.1
	96" X 24"						1'-10	7'-11	•		11'-13/4"			9′-6		4'-01/2"	3'-8 ³ / ₈ " 16	3'-01/4"											3	167.6
17				33"			2'-5	2′-8	1/4"		6'-91/8"			4'-9		5'-31/4"	4'-10 ¹ / ₈ " 6	3'-10 ¹ / ₄ "											3	113.0
18		36"		36"			2'-7	2'-11	3/8"		7'-41/2"			5'-2		5'-77/8"	5'-2 ³ / ₈ " 6	4'-57/8"	3'-31/8"		0'-111/2"								2	121.4
19			58" × 36"				2'-7	4′-9	4		9'-21/2"			7′-0		5'-7 ⁷ / ₈ "	5'-2 ³ / ₈ " 10	4'-35/8"	3'-13/8"	1'115/8"	0'-91/8"								A .	155.4
20	36" X 36"						2'-7	2'-11			7'-41/2"			5'-2		5′-7 ⁷ ⁄8″	5'-61/2" 6	4'-57/8"	3'-31/2"	2'-17/8"	0'-111/8"									121.4
21				39"			2'-9	3'-2			7′-11 ³ ⁄8″			5′-7		6'-0 ³ / ₄ "	5'-11 ³ /8" 6	5'-2"	4'-0"	2'-10"	1'-8"	0'-6"								135.0
22		42"		42"			2'-11	3′-5			8'-61/4"			5'-11		6'-51/2"	5'-2 ³ / ₈ " 6	5'-9 ⁷ / ₈ "	4'-71/2"	3′-55/8″	2'-31/2"	1'-11/8"								148.5
23	48" × 36"						2'-7	3'-11			8'-41/2"			6'-2		5′-7 ⁷ / ₈ ″	5'-2 ³ / ₈ " 8	4'-57/8"	3'-37/8"	2'-17/8"	0'-11 ¹ /8"	′								139.8
24	60" × 36"						2'-7	4'-11			9'-41/2"			7'-2		5′-7 ⁷ / ₈ "	5′-8 ³ ⁄8″ 10	4'-57/8"	3'-37/8"	2'-17/8"	0'-111/8"	'							1	158.2
25			65" × 40"				2'-10	5′-4			10'-23/4"			7′-9		6'-2 ³ /8"	5'-2 ³ / ₈ " 10	5'-5 ³ / ₄ "			1'-113/4"	0'-93/4"							2	180.1
26	72" × 36"						2'-7	5'-11			10'-41/2"			8′-2		5'-7 ⁷ / ₈ "	5'-2 ³ / ₈ " 12	4'-6"		2'-2"									3	182.5
27			72" × 44"				3'-1	5'-11			11'-2 ⁷ /8"			8'-7		6′-8 ³ / ₈ "	5'-2 ³ / ₈ " 12	5′5 ⁷ ⁄8″	4'-37/8"											212.4
28	84" × 36"						2'-7	6'-11			11'-4'/2"			9'-2		5'-7 ⁷ / ₈ ""	5'-2 ³ / ₈ " 14	4'-57/8"	3'-37/8"	2'-17/8"	0'-11'/8"									200.8
29	96" × 36"						2'-7	7'-11		\perp	12'-4'/2"			10'-2		5'-7 ⁷ / ₈ "'		4'-578"		2'-17/8"	0'-11'/8"		1							219.3
	108" × 36"						2'-7	8'-11			13'-4'/2"			11'-2	\vdash	5'-73/8"	5′-2 ³ ⁄ ₈ ″ 18	4'-57/8"										+	<u> </u>	237.7
	120" x 36"						2'-7	9'-11		$+$ \perp	14'-4'/2"		\perp	12'-2		5'-7 ³ / ₈ "	5'-2 ³ / ₈ " 20	4'-57/8"	-		0'-11'8"		-	-				+	5	258.4
	132" × 36" 144" × 36"							10'-11 11'-11	3. "	11."	15'-4'/2"		15."	13'-2 14'-2		5'-73/8"	5'-23/8" 22	4'-57/8"						1				+	4	280.3
34	144 X 36	48"		48"			3'-4	3'-11	3/8"	11/4"	9'-81/8"		1 ⁵ / ₈ "	6'-10	\vdash	5'-7 ³ / ₈ " 7'-3 ³ / ₈ "	5'-2 ³ / ₈ " 24 6'-8 ³ / ₄ " 8		3'-3 ⁷ / ₈ " 4'-10 ³ / ₈ "	Z -1 /8"	0'-11'/8"	4/ 43.11		1		-		\perp	4	196.0
35	48" × 48"	H-0		70		 	3'-4	3'-11		1 72	9'-8'/8"		1	6'-10	\vdash	$7' - 3^{3}/8''$	6'-83/4" 8	6'-03/8"	4'-103/8'	3'-81/-"	2'-63/2"	1 -43/8"	+	+		-		11/4"	5	201.8
36		54"		54"		-	3'-8	4'-5		+ 1	10'-9 ⁷ / ₈ "		1 1	7'-7	\vdash	8'-1 ³ / ₉ "	7'-53/4" 8		6'-21/4"					1				11/2"	2	246.3
37	60" × 48"						3'-4	4'-11		++-	10'-8'/8"			7'-10			6'-83/4" 10	6'-03%	4'-103/8"	3'-81/2"	2'-63/-"	1'-43."	1 0.4	+				11/4"	2	206.6
	72" × 48"						 <u>`</u> 	5'-11			11'-8'/2"			8'-10			12		1 1	J 0 - 2	1 1 N 78	1 A 78		1				1	2	228.7
	84" × 48"					†	$+$ \top $+$ \top $+$	6'-11			12'-8'/2"			9'-10			14	HĪ	 	Ī			1					 	2	250.9
	96" × 48"			1 1				7′-11			13'-81/2"			10'-10			16		 										3	278.9
	108" × 48"							8'-11			14'-81/2"			11'-10			18												3	301.1
42	120" × 48"							9'-11			15'-8'/2"			12'-10			20												3	323.2
	132" × 48"							10'-11	+	V	16'-8'/2"	+	V	13'-10	₩	1 1	22	+	+	+	•	+					•	₩	4	351.2
44	144" × 48"						3′-4	11'-11	1/4"	11/2"	17'-81/2"	1/2"	2"	14'-10	0	7'-33/8"	6'-8 ³ / ₄ " 24	6′-0 ³ / ₈ ″	4'-103/8"	3'-81/2"	2'-63/8"	1'-43/8'	/				1/4"	11/4	4	373.4
	-																			-										



ALTERNATE HANGER ROD DETAIL





SECTION C-C

STANDARD TRASH RACKS

JULY 03,2002 DATE

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
MENDED FOR APPROVAL

STD DWG

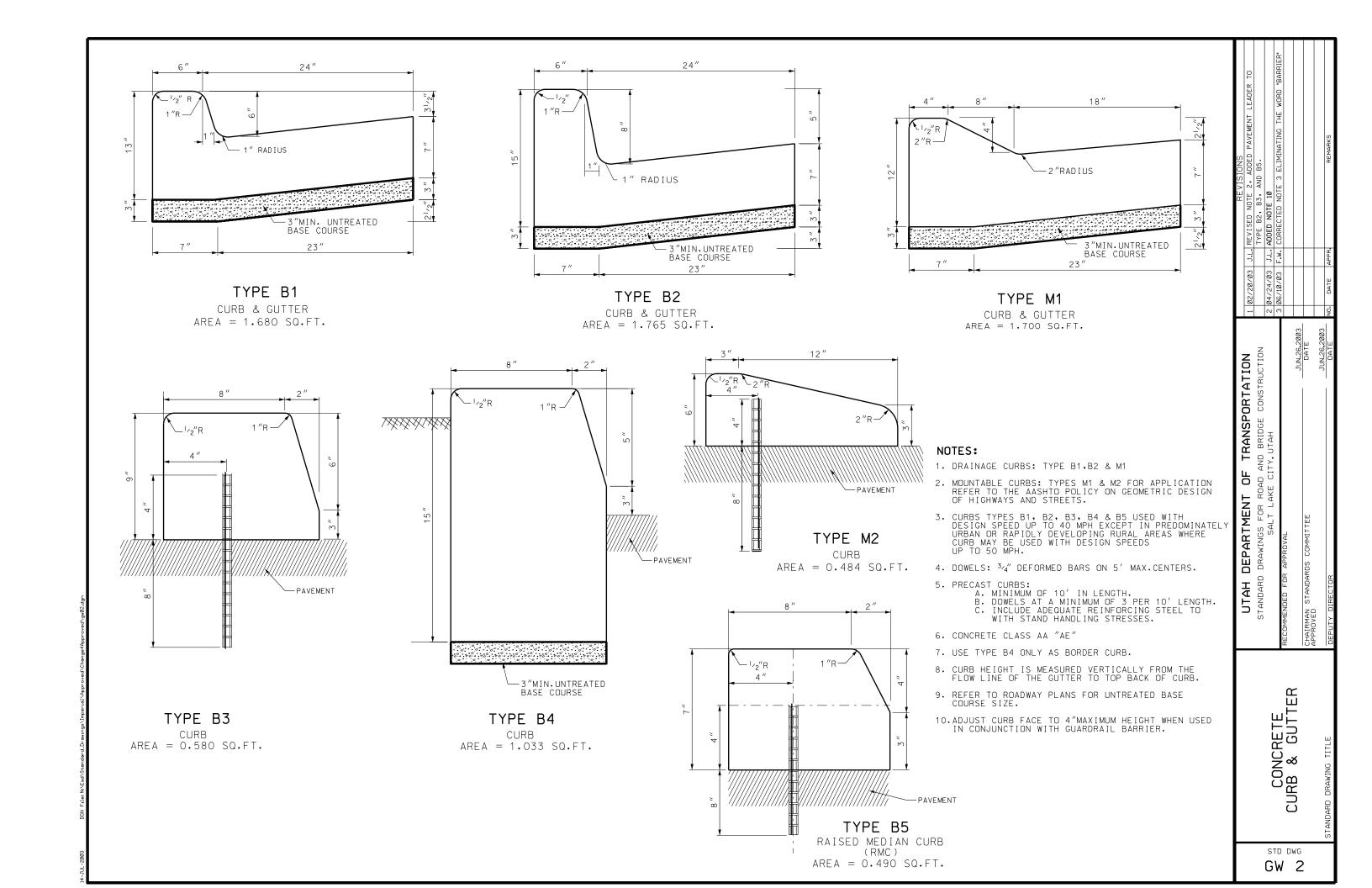
GF 11

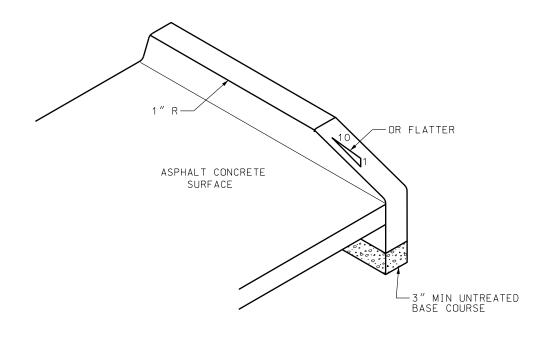
	TO E	BE USED	FOR	(NOM. S	SIZE)				TRAN	SVERSI	E BARS											MAIN	BARS	5					NO. OF	WE I GHT
3TS	ATED	IPES ATED CHES	ETE	LATE	I-PLATE ARCHES				1- E	ACH RI	EQUIRE	D			2- EA.		W2				2-E	ACH R	EQUIF	RED			W1 TO	w4.4	HANGER AND HANGER	OF STRUCT
BOX CULVER	CORRUGATED	METAL PIPES CORRUGATED PIPE ARCHES	CONCRETE PIPE	MULTI-PLATE ELLIPSES	TI-P E AR(А		L1			L2		L3	L4	W1		wz	W3	W4	W 5	W6	W7	W8	W9	W10	W11	WI IU	W11	RODS (SPACED EQUALLY	STEEL
O	00	MET CO PIF	Ö	MUL	MULT PIPE		LENGTH	THICKNESS	WIDTH	LENGTH	THICKNESS	WIDTH	LENGTH	LENGTH	LENGTH	LENG	TH NO.	LENGTH	LENGT	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGT	H LENGTH	THICKNES	SWIDTH	LGUALLI	, LBS.
5 156" x	48"					3′-4	12'-11	1/4"	11/2"	18'-8'/8"	1/2"	2"	15'-10	0	7'-37/8"	6'-83	3/4" 26	6'-03/8"	4'-103/8	" 3'-8 ³ / ₈ "	2'-63/8"	1'-43/8"					1/4"	11/4"	4	395.6
6 168" × 4						A	13'-11	A	A	19'-8 ¹ / ₈ "	Å	A	16'-10	A	4	A	28	4	A	A	A	A					4	A	5	423.5
7 180" ×						1 1	14'-11			20'-81/8"			17'-10	1	1	1	30	1	1	1	V	1						1	5	445.7
3 192″ x	48"					3'-4	15'-11			21'-81/8"			18'-10	0	7'-37/8"	6'-83				s" 3′-8 ³ ⁄8"	1	1'-43/8"						11/4"	5	467.9
9					73" × 55"	2'-6		<u> </u>		12'-6'/4"			8'-2	10'-41/2"	8'-3 ³ / ₈ "	+	/ ₄ " 12	7'-0"	5'-10"	4'-8"	3'-6"	2'-4"						11/2"	6	339.1
)					76" × 57"			1/4"		12′-11 ⁷ 8″			8'-61/2	10'-81/2"			01/4" 12		6'-41/2"		4'-01/2"		1'-81/2"		'			↓	6	357.5
1	60′	"	60"			2′-8		3/8"		11'-11 ¹ /2"			7'-21/2	9'-8"	8'-11 ¹ /8		₂ " 10	7′-6″	6'-4 "		4'-0"			0'-6"					2	310.7
2				56" × 62"	′	2'-9		A		11'-10 ¹ /2"			6'-111/2		9'-21/2"		/ ₈ " 10	-	6'-2 ³ / ₈ "		3'-10 ³ / ₈								2	309.3
3					81" × 59'					13′-7 ³ / ₈ ″				11'-4"	8'-9 ³ / ₄ "		/ ₈ " 14		5'-111/			2'-51/8"							3	367.2
4					84" × 61'					14'-1"			9'-31/2	11'-9"	9'-1"		/ ₄ " 14		6'-53/4"				1'-93/4"						3	387.1
5					87" × 63'	_				14'-63/8"			9'-7	12'-1"	9'-41/8"	8'-7'			7'-01/8"		4'-81/2"				1				3	405.7
60" x 6		.			1	2′-8			\bot	11'-11'/8"			7'-21/2"	9'-8"	8'-111/4		/2″ 10	7′-6″	6'-4"	5'-2"	4'-0"	2'-10"		0'-6"					2	310.7
·	66"	′	66"			2'-1	1 5'-5			13'-11/4"			7'-11	10'-7"	9'-85/8"		11/4" 10		7'-73/4"		5'-33/4"				0'-73/4"				3	365.5
72" x 6						↓	5′-11			12'-11'/2"			8′-5	10'-51/2"	8'-11 ¹ / ₈	8'-2'		7'-5"	6'-4 "	5'-2"	4'-0"	2'-10"	1'-8"	0'-6"					4	354.5
84" × 6							6'-11			13'-11 ¹ / ₈ "			9'-5	11'-5 ¹ /2"	A	1	14	A	A	1	A	A	A	A					3	380.8
96" × 6							7′-11			14'-11'/2"			10'-5	12'-5 ¹ /2"			16												3	412.8
108" × 6							8'-11			15′-11 ¹ / ₂ "			11'-5	13'-51/2"			18												3	444.8
120" x 6							9'-11			16'-11 ¹ / ₂ "			12'-5	14'-51/2'			20												4	482.7
132" x 6							10'-11			17'-11 ¹ /2"			13'-5	15'-51/2"			22												4	514.7
144" × 6							11'-11			18′-11 ¹ / ₂ "			14'-5	16'-5 ¹ / ₂ "			24												4	546.6
156" x 6							12'-11			19′-11 ¹ / ₂ ″			15'-5	17'-51/2"			26												5	584.6
168" x 6							13'-11			20'-11'/2"			16'-5	18'-51/2"			28												5	616.8
180" × 6						₩.	14'-11			21'-11'/2"			17'-5	19'-51/2"		!	30		<u> </u>	1	<u> </u>	.	.	T					5	648.6
192" x 6	50"					2'-1	1 15'-11			22′-11 ⁵ ⁄8″			18′-5	20'-51/2'				7′-5″	6'-4	5'-2"			1'-8"	0'-6"					6	686.5
)				62" × 68"	′	3'-0				12′-11 ⁷ ⁄8″			7′-8	10′-5″	10'- 01/4					6'-43/8"					0'-63/8	"			6	380.7
·					92" × 63"	2'-1	1 7'-7			15'-2"			10'-1	12'-6"	9'-73/8"	8'-10		•		5'-47/8"									3	432.2
					95" × 67"			! • •		15'-71/2"			10'-5	13'-1"	9′-10 ⁵ ⁄8″	9'-1"		8'-3 ³ / ₈ "	7'-13/8'		4'-93/8"							1	3	452.2
:					98" X 69"	_		3/8"		16'-1/8"			10'-9		10′-13/8″	9'-4"		8′-9 ⁷ / ₈ "			5'-3 ⁷ / ₈ "	-				<u> </u>		11/2"	3	473.8
	72	"	72"			3'-2		1/2"		14'-2 ⁷ / ₈ "			8′-8	11'-8"	10′-6 ³ / ₈ ″	9′-83	-	9'-0"	7'-10"	6'-8"			3'-2"	2'-0"	0'-10'			13/4"	4	472.8
				67" × 75"		3'-4		A		14'-13/4"			8'-41/2		10'-111/2'					8 ¹ 7′-8 ⁵ /8″						/8 [#] 0′ -8 ⁵ / ₈ "		 	4	475.6
					103" X 71"	3'-2		\vdash	\perp	16'-85/8"			11'-3	14'-0"	10'-5"			9'-63/8"			5'-05/8"							\perp	4	570.8
			_		106" X 73"	_				17'-21/2"				14'-41/8"		9'-97		8'-111/8"			6'-3'/2"								4	598.4
	_		_		112" X 75"	3'-4				17'-103/4"			12'-11/2	15'-01/2"			-	9'-91/8"			6'-31/8"				1'-71/8				4	632.1
70// 7/	.,,		_		114" X 77"	3'-5				18′-33/8″			12'-4	15'-4"	$11' - 2^{3} \frac{1}{4}''$	10'-9				7'-101/2'									3	651.1
72" × 72			_			3 -2	5'-11			14'-27/8"			8'-8	11'-61/2"	10′-6 ³ /8″	9'-83		9'-0"	7'-10"	6'-8"	5'-6"	4'-4"	3'-2"	2'-0"	0'-10'				3	467.0
84" × 72						1	6'-11			15'-27/8"			9'-8	12'-6'/2"		1	14	+	1	1	1	—	1	<u> </u>	1				3	508.1
96" × 72				ļ	+	+	7′-11		+	16'-2 ⁷ / ₈ "			10'-8	13'-6'/2"	\vdash		16			+		\vdash		+-				+	3	549.1
108" x 7			_		+	++	8'-11			17'-27/8"			11'-8	14'-6'/2"			18			+		\vdash		\perp					4	595.9
120" × 7		-			+	+	9'-11			18'-21/2"			12'-8	15'-6'/2"			20			+		\vdash							4	636.9 678.0
132" × 7		-			+	\perp	10'-11			19'-27/8"			13′-8	16'-6'/2"			22			+		\vdash							4	724.8
156" × 7			_		+	+	11'-11			20'-27/8"			14'-8	17'-61/2"		+	24			+		\vdash		\vdash					5	
156" × 7						+	12'-11			21'-21/2"			15′-8	18'-61/2"		+	26			+		\vdash		\vdash	\vdash			+	5	765.8
168" × 7		-	-	-	+	$+\bot$	13'-11	 	+	22-'1/2" 23'-2 ⁷ /8"			16'-8 17'-8	19'-61/2"		\perp	28		\perp	\perp	$\perp \perp$	\vdash	\perp	 	\perp				6	806.9 853.7
		-	_	-	+	7/ ^	14'-11	+	$+$ \perp	24'-27/8"				20'-61/2"	10′-6 ³ ⁄8′	" 0' 63	30	0/ 5"	7/ 10"	 	<u> </u>	4'.4"	7/0"	1 2/ - "	0/ 10/	.		$+ \perp$	6	
9 192″ x 7	_		_		96" × 74"	3'-2		I	 	16'-5 ⁵ / ₈ "	1."	1 2"	18'-8	21'-6'/2"				9'-0" 9'-10"	0'-0"	6'-8"			3'-2" 4'-0"		0'-10'				9	894.7
				I	1 30 X 14"	13'-3	7'-11	1′2″	11/2"	א"כ− מו	'/2"	2"	1081/2	13′-8″	10'-10"	9 -11	·~8 15	01 د	o -8	7′-6″	6'-4"	J -Z	4 -0	2 -10"	1'-8"		'/4"	1 3/4"	3	540.7

		1011 * 100001 * 01		REVISIONS	
		NOTIFIED TO INTELLED HELD			
(STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION			
s: 3		SALT LAKE CITY, UTAH			
TD F	SIANDARD				
	_	RECOMMENDED FOR APPROVAL			
иG 12		JULY 03,2002			
2		CHAIRMAN STANDARDS COMMITTEE DATE			
		307'S 03'5805			
	STANDARD DRAWING TITLE	DEPUTY DIRECTOR DATE	NO. DATE AF	APPR.	

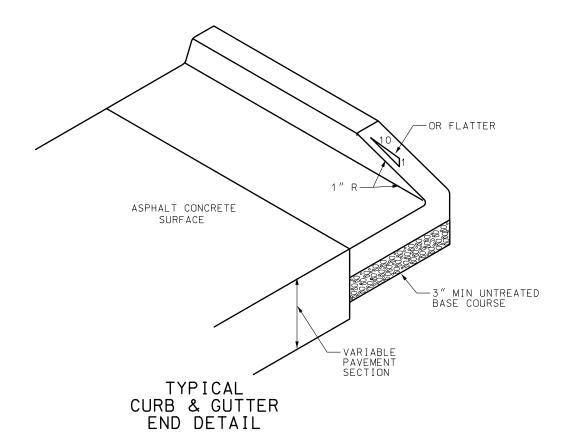
MEDIAN WITH RAISED ISLAND TRAFFIC LANE 100'MIN TRAFFIC LANE -8" WHITE LINE 90' BELOW 40 MPH 140' FOR 40-50 MPH 180' OVER 50 MPH TURNING LANE -4" YELLOW LINE (SEE NOTE 3) TYPE "M2" CURB REQ'D. 10" DIA. HOLE — -10" DIA. HOLE 4" YELLOW LINE -4" YELLOW LINE -PLOWABLE END SECTION TRAFFIC LANE PLOWABLE END SECTION TRAFFIC LANE UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RAISED ISLAND DETAIL RAISED ISLAND DETAIL TYPE "M2" CURB TYPE "B5" CURB NOTES: -SEE STD DWG GW 2 1. DESIGN TO SHOW CONTROL POINTS - STATION & OFFSET. -CONCRETE CURB TYPE M2 SEE STD DWG GW 2 2. PAINT ISLAND CURBS WITH RETROREFLECTIVE PAINT AS DETERMINED BY THE DIRECTION OF TRAVEL. 3. USE OF 4" YELLOW LINE INSIDE LEFT TURN LANE OPTIONAL. TOP OF SURFACING-RAISED MEDIAN AND PLOWABLE END SECTION TOP OF SURFACING-PLOWABLE END SECTION CONCRETE CLASS AA(AE) PLOWABLE END SECTION CONCRETE CLASS AA(AE) 3" MIN UNTREATED BASE COURSE 3" MIN UNTREATED BASE COURSE TOP OF SURFACING TOP OF SURFACING STD DWG PLOWABLE END SECTION DETAILS

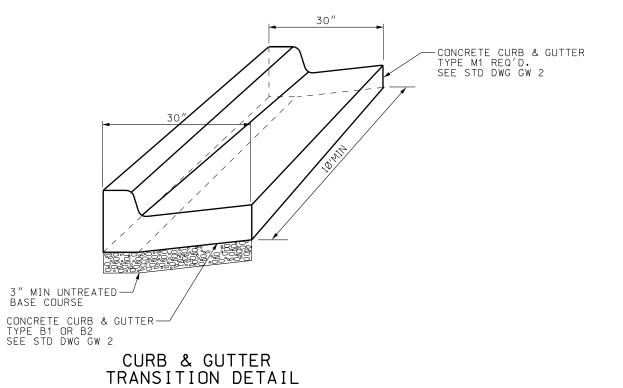
GW 1





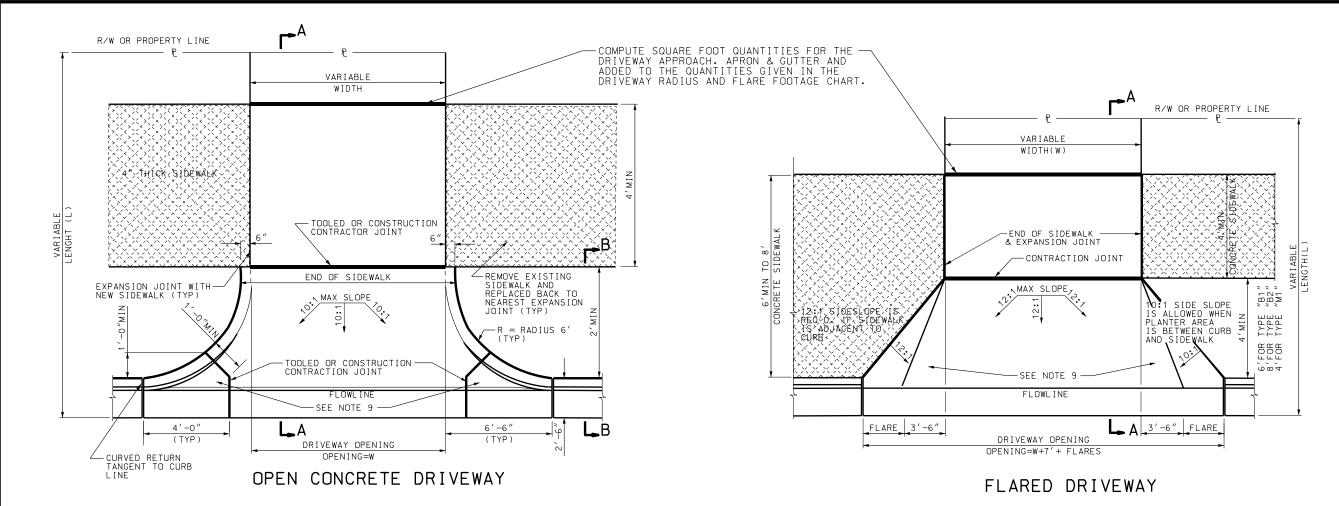
TYPICAL CURB END DETAIL





JULY 03,2002 DATE UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
MENDED FOR APPROVAL CONCRETE CURB & GUTTER DETAILS

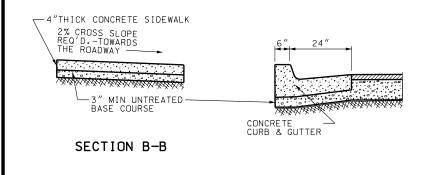
STD DWG GW 3

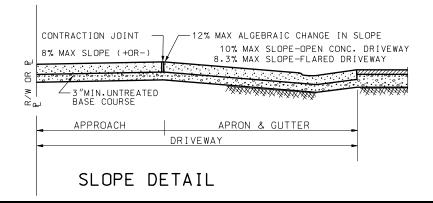


2% CROSS SLOPE REQ'D. -TOWARDS THE ROADWAY CONTRACTION JOINTS 3" MIN UNTREATED BASE COURSE APPROACH APRON & GUTTER DRIVEWAY (L)

5 7110	FLARE AREA CHART	
f † ²	FLARED DRIVEWAY	ft ²
44.13	12:1 FLARES	
	1- TYPE "B1" CURB & GUTTER	88.09
	2- TYPE "B2" CURB & GUTTER 1	129.92
	3- TYPE "M1" CURB & GUTTER	44.56
ES OF		
O THE	10:1 FLARES	
	1- TYPE "B1" CURB & GUTTER	78.90
	2- TYPE "B2" CURB & GUTTER 1	115.39
	3- TYPE "M1" CURB & GUTTER	34.66
		44.13

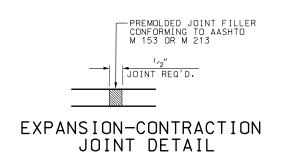
SECTION A-A

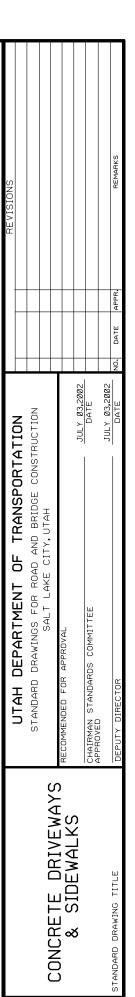




NOTES:

- 1. DRIVEWAY DIMENSIONS (MAX.& MIN.) ARE LOCATED IN U.D.O.T. "MANUAL FOR THE ACCOMMODATION OF UTILITIES AND THE CONTROL AND PROTECTION OF STATE HIGHWAY RIGHTS OF WAY" CURRENT EDITION.
- 2. MAXIMUM DISTANCE BETWEEN TOOLED OR CONSTRUCTION JOINTS 10' LATERALLY AND LONGITUDINALLY SPACED EQUALLY.
- 3. PROVIDE EXPANSION JOINTS WHERE CONCRETE SIDEWALK BUTTS AGAINST CONCRETE DRIVEWAYS AND IN CONCRETE SIDEWALK AT 30 FEET INTERVALS.
- 4. DO NOT PAY FOR SIDEWALK INSIDE THE DRIVEWAY LIMITS (WIDTH AND LENGTH) $\,$
- 5. OPEN CONCRETE DRIVEWAY FLARED DRIVEWAY
 A: RESIDENTIAL = 6 inch THICK. COMMERCIAL = 7 inch THICK
 B: EXTEND DRIVEWAY APPROACH TO R/W PROPERTY LINE
 C: IF THE GRADES SHOWN ON THE SLOPE DETAIL CANNOT
 BE MET, DEPRESS THE LONGITUDINAL SLOPE OF THE SIDEWALK
 AT A RATE OF 5 PERCENT TO MEET THE APRON APPROACH
 ELEVATION.
- 6. USE CLASS AA(AE) CONCRETE FOR SIDEWALK AND DRIVEWAYS
- 7. USE UNTREATED BASE COURSE UNDER ALL SIDEWALKS AND DRIVEWAYS.
- 8. 10:1 = 10% SLOPE; 12:1 = 8.33% SLOPE.
- 9. QUANTITIES FOR DRIVEWAYS INCLUDE RADIUS AND FLARES TO LIP OF GUTTER.

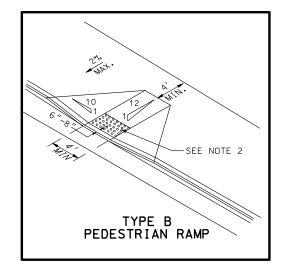


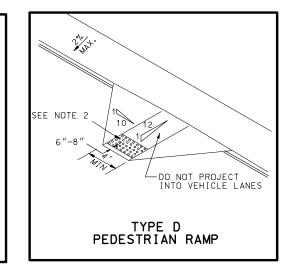


STD DWG

GW 4

SEE NOTE 3





TYPE A - PEDESTRIAN RAMP
THE ENTIRE RAMP SLOPE IS ACHIEVED OUTSIDE THE SIDEWALK SECTION. A STEEP FACED CURB IS USED ALONG THE RAMP.
THIS TYPE OF RAMP IS ALWAYS PREFERRED BECAUSE IT PROVIDES A CONSISTENT SIDEWALK SECTION FREE OF RAMP CROSS-SLOPES.

TYPE B - PEDESTRIAN RAMP
THE STEEPEST ALLOWABLE SLOPE OCCURS ALONG THE SIDEWALK
AT 10:1. PROVIDE AT LEAST 4' OF SIDEWALK WIDTH BEYOND
THE RAMP.

TYPE C - PEDESTRIAN RAMP

USE THIS TYPE OF RAMP WHEN THERE IS INSUFFICIENT WIDTH

TO ACCOMMODATE TYPE B PEDESTRIAN RAMP. THE STEEPEST

ALLOWABLE SLOPE OCCURS ALONG THE SIDEWALK AT 12:1.

PROVIDE AT LEAST 4' X 4' SIDEWALK AT THE BASE OF

TYPE D - PEDESTRIAN RAMP
DO NOT PROJECT THE BUILT-UP RAMP SECTION INTO TRAFFIC LANE.

TYPE E - PEDESTRIAN RAMP

USE THIS TYPE OF RAMP AT INTERSECTIONS WHEN CROSSWALK FACILITIES ARE PROVIDED.

TYPE F - PEDESTRIAN MEDIAN BREAK
USE THIS TYPE OF MEDIAN ACCESS WHEN CROSSWALK
FACILITIES ARE PROVIDED.

FIGURE 1
ILLUSTRATES THE CROSS SECTION AND PROFILE VIEW OF
TYPE C AND TYPE E PEDESTRIAN RAMPS. CONSTRUCT THE RAMP
BASE SURFACE EVEN WITH THE PAVEMENT SURFACE AT THE
FACE OF THE CURB.

NOTES:

1. PEDESTRIAN RAMPS TYPE A, B, C AND D ARE ACCEPTABLE FOR USE AT MID-BLOCK CROSSWALKS.

2. LOCATE DETECTABLE WARNINGS SO THAT THE EDGE NEAREST THE CURB LINE OR OTHER POTENTIAL HAZARD IS 6 TO 8 INCHES FROM THE CURB LINE OR OTHER POTENTIAL HAZARD. PROVIDE 2-FOOT MINIMUM DEPTH.

SEE FIGURE 3 FOR TRUNCATED DOME SIZE AND SPACING DIMENSION DETAILS.

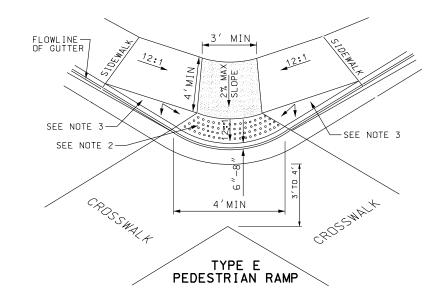
3. WARP SIDEWALK TO MATCH.

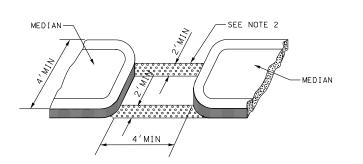
4. TYPE E DETECTABLE WARNING SIDE LIMITS: PROVIDE SCORED LINE TO ALIGN DIRECTLY WITH THE OUTER CROSSWALK MARKINGS.

0.5"OR 50% OF BOTTOM

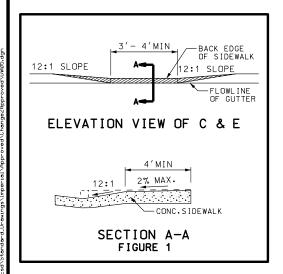
5. PROVIDE ONE DESIGNATED "VAN ACCESSIBLE" PARKING SPACE IN EVERY EIGHT ACCESSIBLE PARKING SPACES, BUT NOT LESS THAN ONE.

6. REFER TO THE MUTCD (LATEST EDITION) FOR RESERVED PARKING SIGNING FOR DISABLED PERSONS (R7-8).





TYPE F PEDESTRIAN MEDIAN BREAK



TYPE C

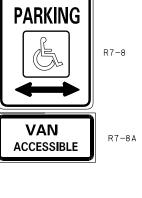
PEDESTRIAN RAMP

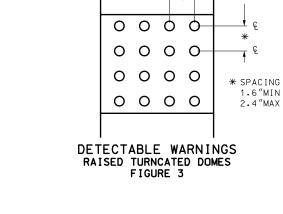
4/1

SEE NOTE 2-





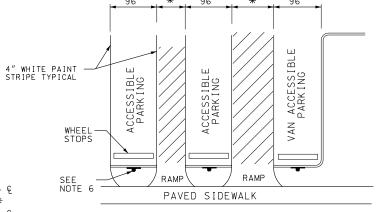




0.9"MIN

1.4 "MAX

Ę



STRIPING DETAILS FOR RESERVED ACCESSIBLE PARKING FIGURE 2

* 60 "MIN. FOR ACCESSIBLE PARKING 96" MIN. FOR VAN ACCESSIBLE PARKING

RESERVED ACCESSIBLE PARKING SIGNING

SIGNING FOR "VAN ACCESSIBLE" PARKING SPACES

STD DWG GW 5

SS

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PEDESTRIAN

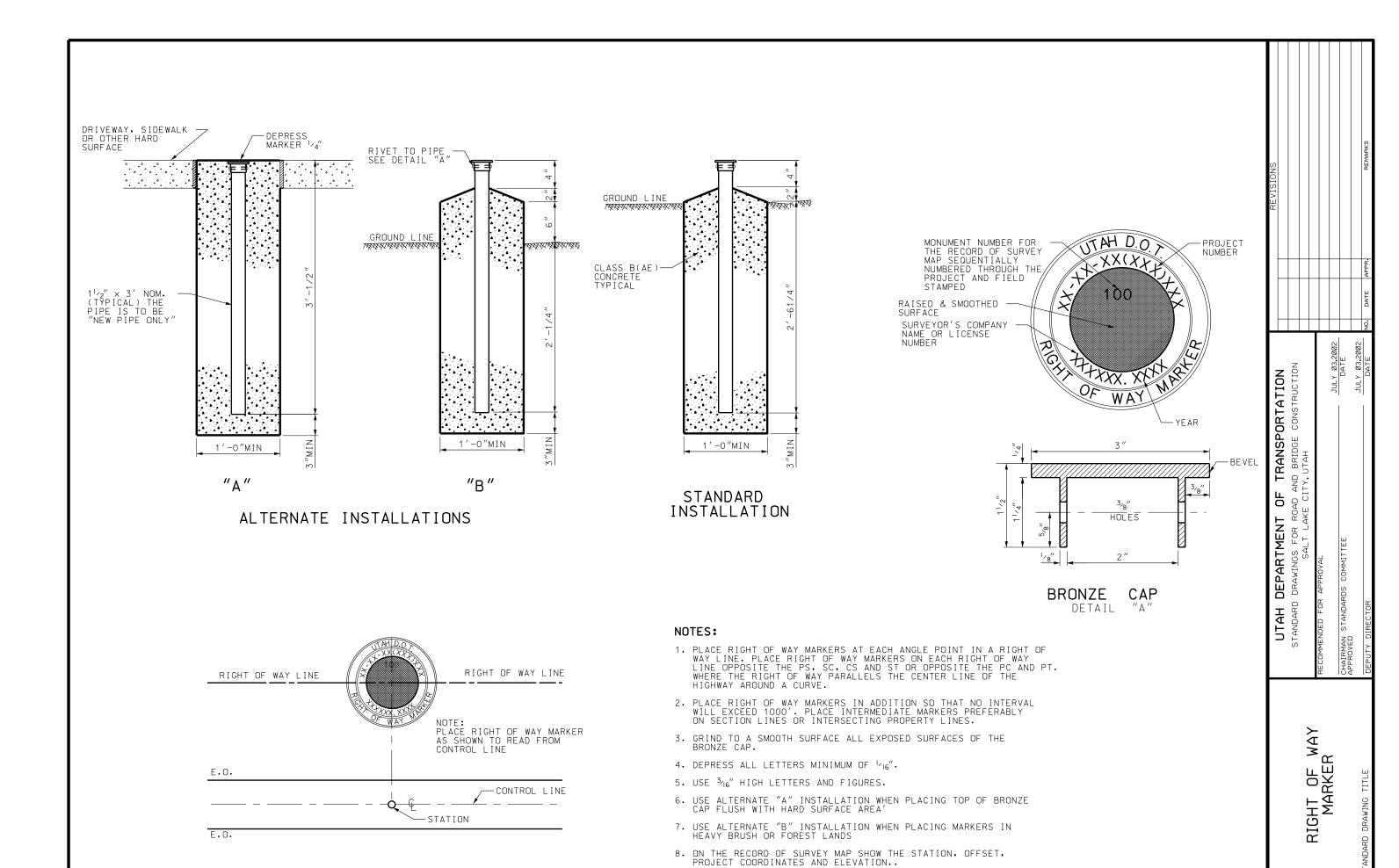
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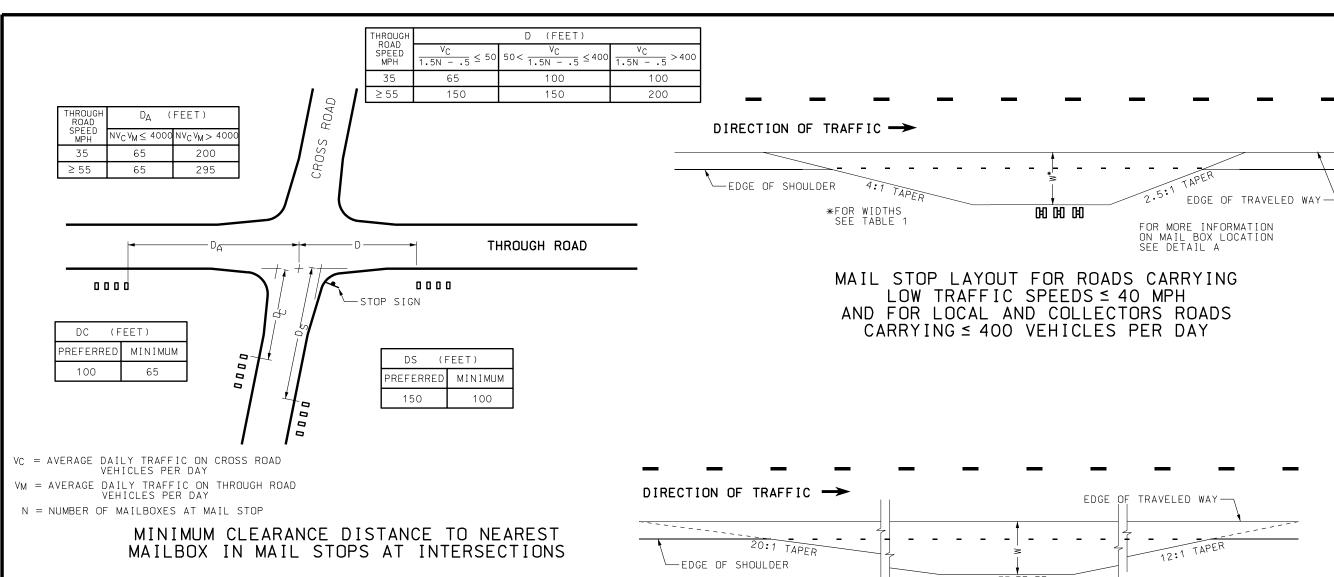
H DEPARTMENT O DRAWINGS FOR ROAD SALT LAKE (

UTAH Standard Di

SEE NOTE 6



STD DWG

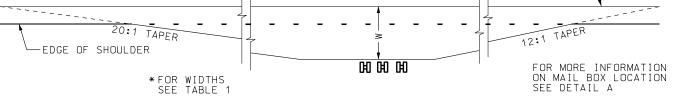


LATERAL PLACEMENT OF MAILBOXES

TABLE 1

HIGHWAY TYPE AND TRAFFIC CONDITIONS	SURFACE OF AVAILABLE		MAILBOX IS TO E EDGE OF TURN	DSIDE FACE OF BE OFFSET BEHIND OUT OR USABLE - INCHES
	PREFERRED	MINIMUM	PREFERRED	MINIMUM
RURAL HIGHWAY ADT OVER 10,000 VPD	> 12	8		
RURAL HIGHWAY ADT = 1,500 TO 10,000 VPD	12	8		0
RURAL HIGHWAY ADT = 100 TO 1500 VPD	10	8		ļ
RURAL ROAD ADT UNDER 100 VPD	8	6	8 TO 12	10
RURAL ROAD ADT UNDER 50 VPD SPEED = 40 MPH OR LESS	6	2		8
RESIDENTIAL STREET WITHOUT CURB OR ALL-WEATHER SHOULDER	2	0		8 *
CURBED RESIDENTIAL STREET	NOT APP	LICABLE	8 TO 12 BEHIND TRAFFIC FACE OF CURB	6 BEHIND TRAFFIC FACE OF CURB

ADT = AVERAGE DAILY TRAFFIC VPD = VEHICLES PER DAY * IF A TURN OUT IS PROVIDED, THIS MAY BE REDUCED TO ZERO.



MAIL STOP LAYOUT FOR ROADS CARRYING HIGH SPEED TRAFFIC > 40 MPH

OF TRANSPORTATION
DAD AND BRIDGE CONSTRUCTION
E CITY, UTAH

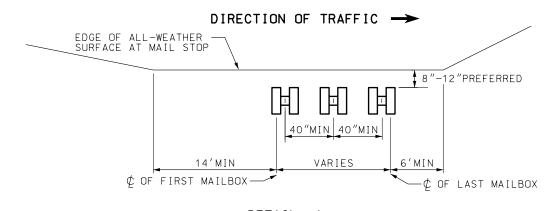
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UTAH DEPARTMENT OF Standard drawings for Road Salt Lake C

NEWSPAPER AND MAILBOX STOP LAYOUT

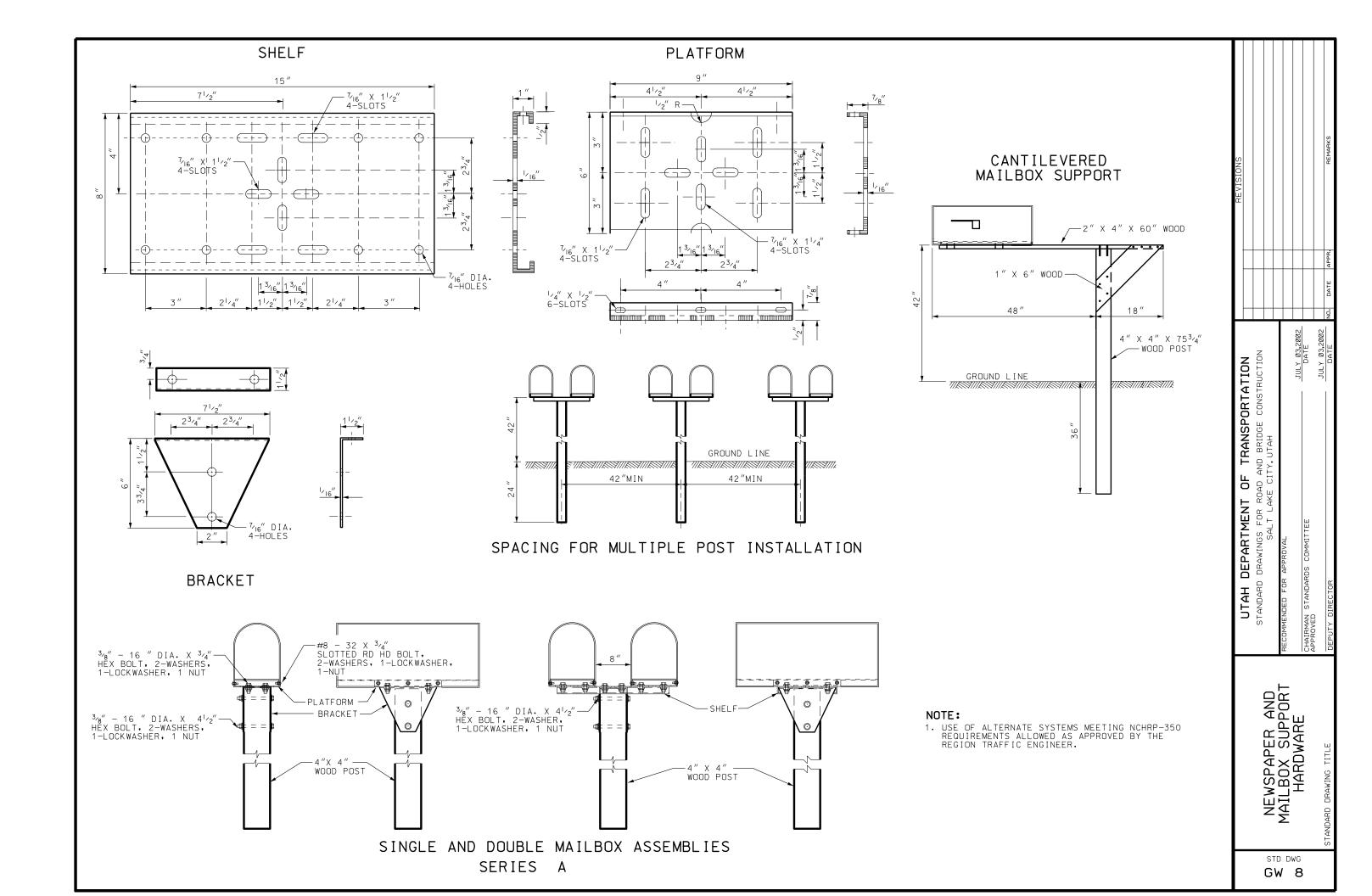
STD DWG

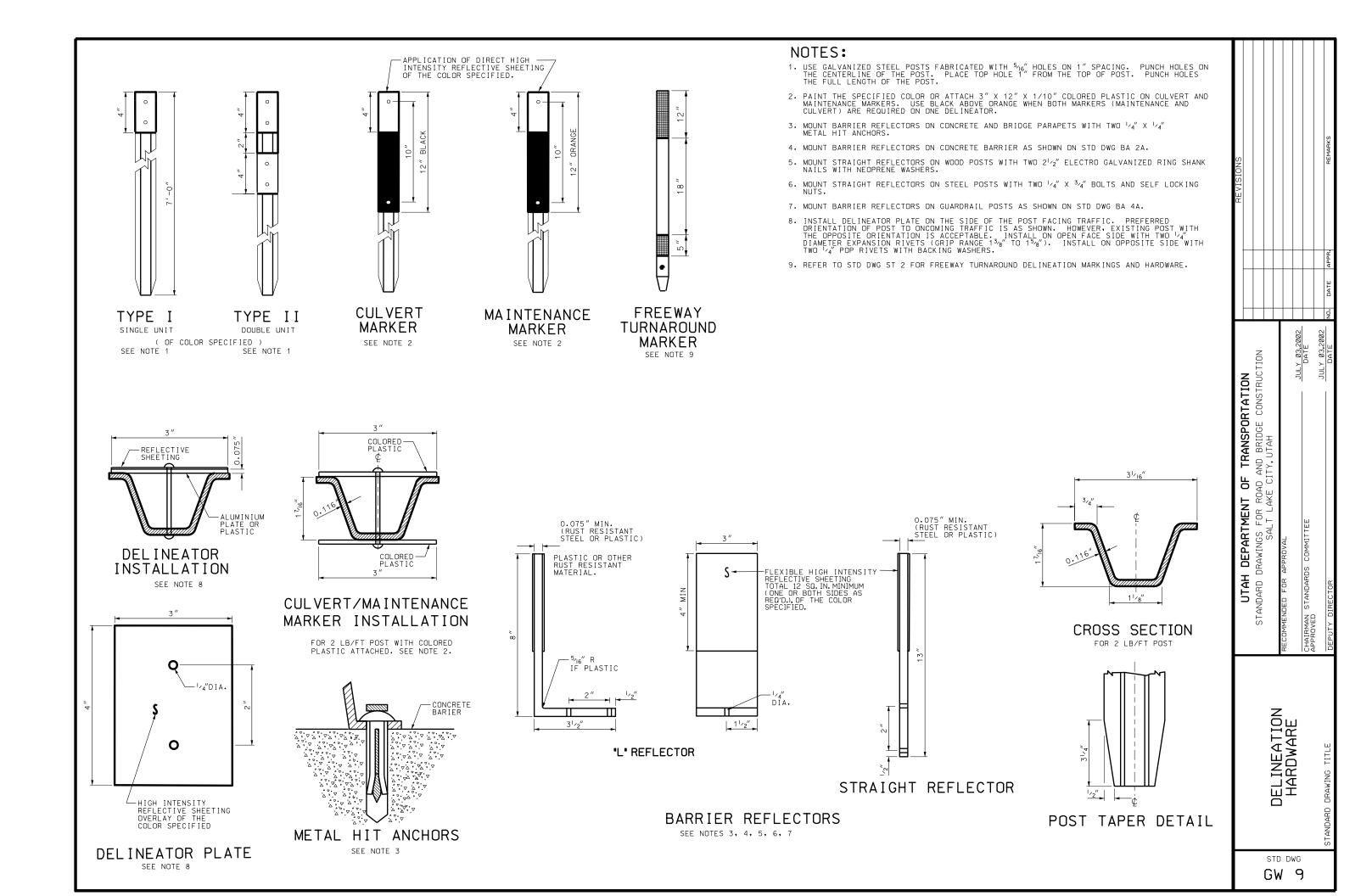
GW 7

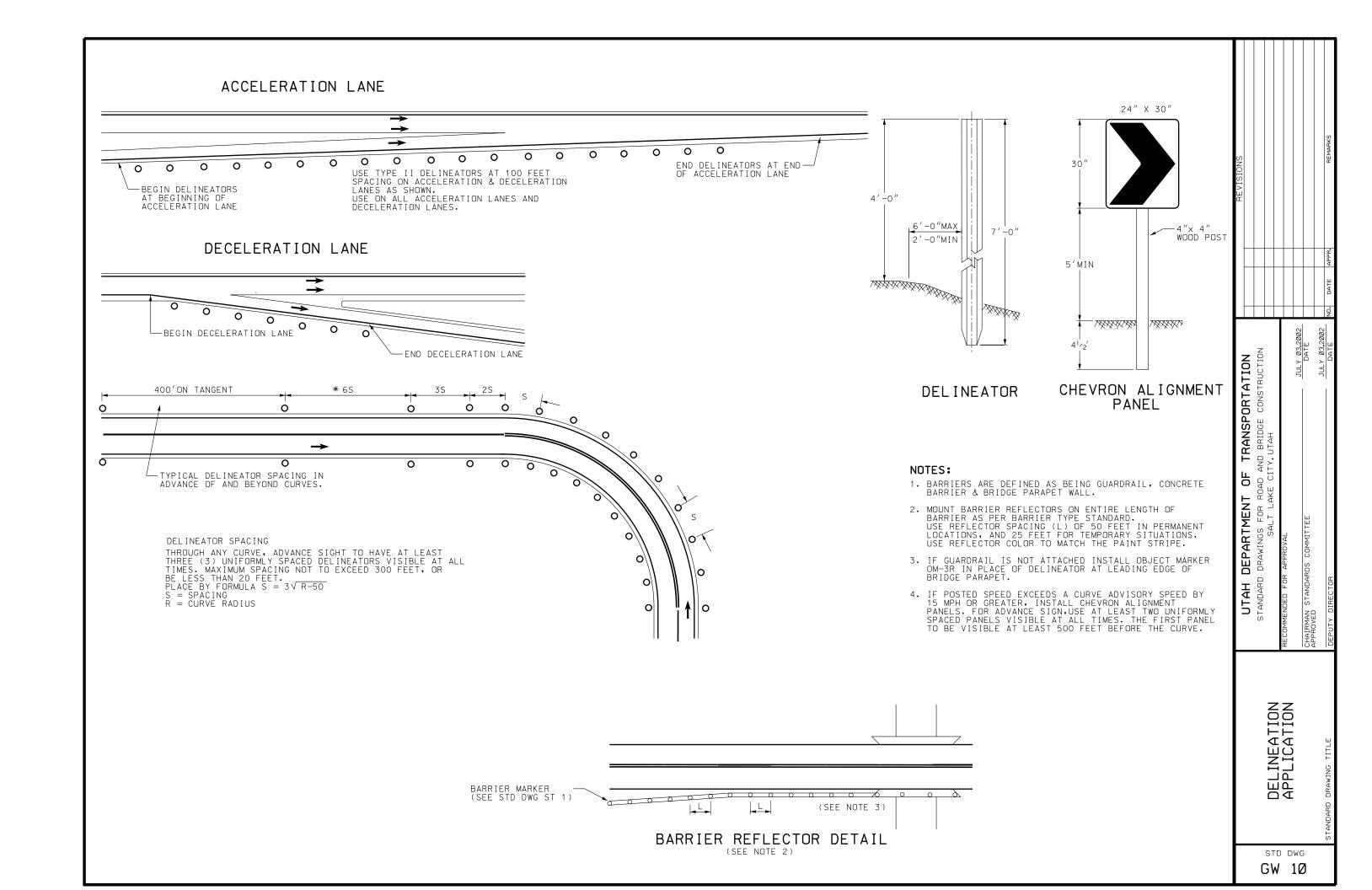


DETAIL A

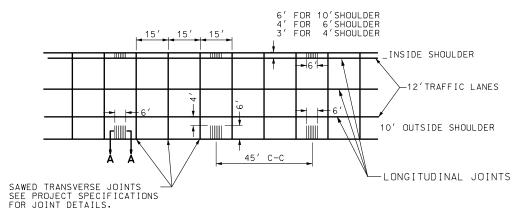
MAILBOX LOCATION AT MAIL STOP



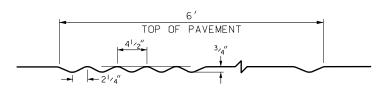




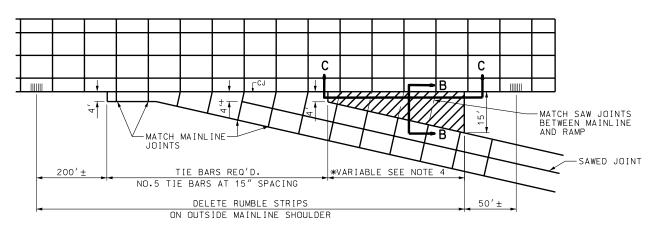
JOINTS FOR HIGHWAYS WITH CONCRETE TRAFFIC LANES AND SHOULDERS



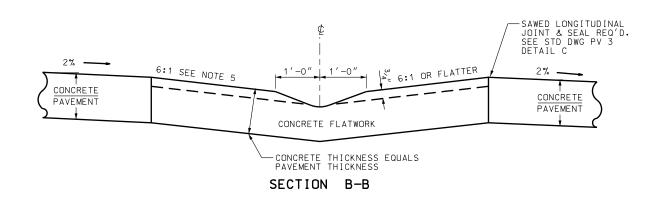
TYPICAL JOINT LOCATION AND RUMBLE STRIP DETAIL



SECTION A-A URBAN AND/OR RURAL



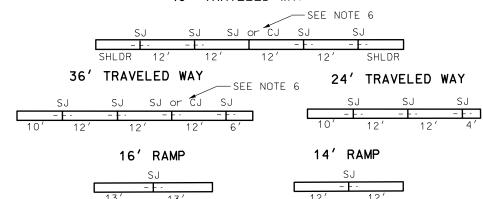
SHOULDER TRANSITION FOR RAMPS RAMP GORE PAVING DETAIL



NOTES:

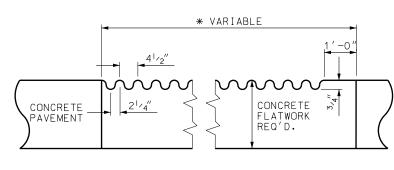
- 1. DO NOT PLACE RUMBLE STRIPS OVER STRUCTURES.
- 2. IN FORMING THE RUMBLE STRIP REMOVE EXCESS MATERIAL SUCH THAT THERE IS NO PROJECTION OF THE CONCRETE ABOVE THE FINISH GRADE OF THE PAVEMENT.
- 3. RUMBLE STRIPS NOT REQUIRED WHERE CONCRETE CURB & GUTTER IS PLACED.
- 4. ESTIMATED QUANTITIES FOR CONCRETE FLATWORK ARE CALCULATED ON TANGENT SECTION. IN ALL CASES LENGTH OF GORE PAVING WILL BE CARRIED AHEAD UNTIL THE DISTANCE BETWEEN PAVING IS 15 feet.
- 5. SLOPE MAY VARY TO MEET DESIGN CONDITIONS ON RAMP AND MAINLINE. GRADE TO DRAIN, ADJUST FOR FIELD CONDITIONS. CORRUGATIONS NORMAL TO MAINLINE.
- 6. CONTACT JOINT (CJ) TIE BARS REQUIRED AT ALL LOCATIONS WHERE CONCRETE IS TO BE EXTENDED SEE STD DWG PV 3 AND PV 4 FOR JOINS DETAILS.

48' TRAVELED WAY



REQUIRED PAVING CONFIGURATIONS

CJ - CONTACT JOINT SJ - SAW JOINT

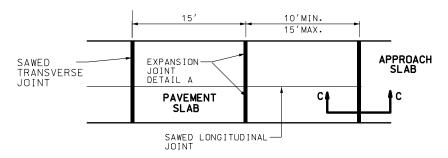


SECTION C-C

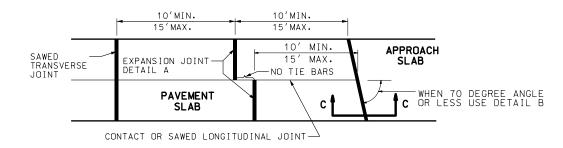
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UTAH DEPARTMENT OF TRANSPORTATION	STANDARD DRAWINGS FOR ROAD AND RRIDGE CONSTRIICTION	HVII ALL AAV I LIVO	RECOMMENDED FOR APPROVAL	Ut _	CHAIRMAN STANDARDS COMMITTEE DATE	C00C K0 X = 11.	LEVE CONTRACTOR
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STD DWG PV 1

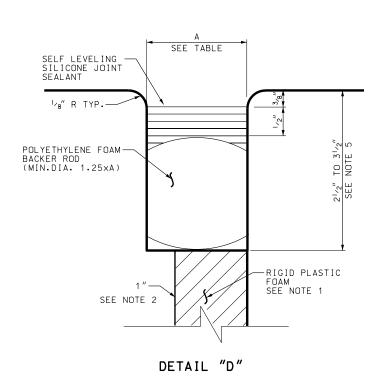
PAVEMENT / APPROACH SLAB DETAILS

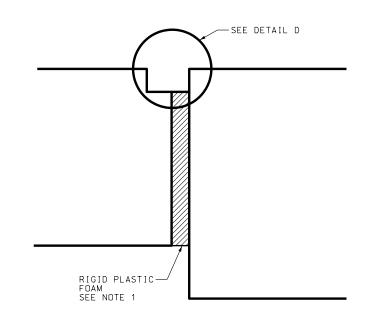


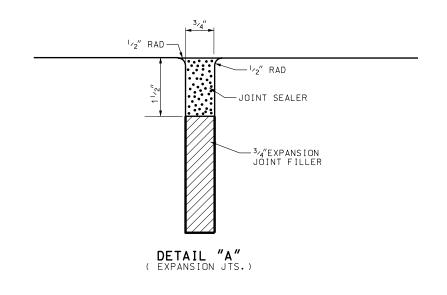
NORMAL APPROACH SLAB



SKEWED APPROACH SLAB







SECTION C-C

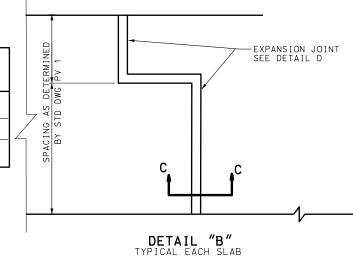
NOTES:

- 1. USE CLOSED CELL, RIGID PLASTIC FOAM. CUT RIGID PLASTIC FOAM TO CONFORM TO THE CROSS SECTION OF THE PAVEMENT AND FURNISH IN STRIPS EQUAL TO THE WIDTH OF THE PAVEMENT SLAB. MAKE THE TOP SURFACE SMOOTH. PROVIDE A SNUG FIT WITHOUT LOSS IN THICKNESS OF THE MATERIAL.
- 2. FOR BRIDGES GREATER THAN 250 feet LENGTH, USE $1^{\rm L}{\rm _{2}''}$ FOR TEMPERATURES LESS THAN 50°F. AT TIME OF ROADWAY PAVING.
- 3. DO NOT INSTALL JOINT SEALANT ABOVE 90°F. OR BELOW 50°F.
- 4. FOR STEPPED END APPROACH SLABS, APPLY DETAIL D ALONG LONGITUDINAL EDGES OF STEP, HOWEVER, DO NOT PLACE DOWELS ALONG LONGITUDINAL EDGES.
- 5. DEPTH TO BE DETERMINED BY CONTRACTOR BASE ON ACTUAL COMPRESSED BACKER ROD HEIGHT.

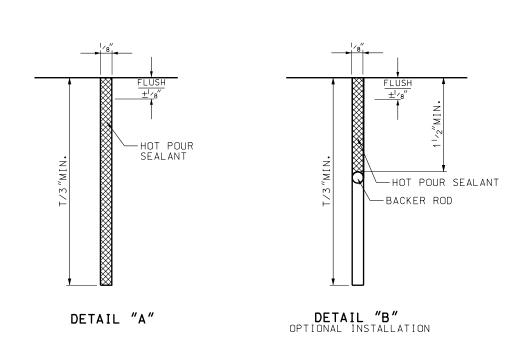
APPROACH SLAB JOINT WIDTH (inch)

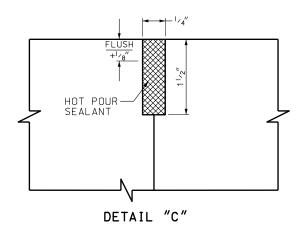
TEMPERATURE (DEG F)	DIMENSION A (FOR BRIDGES GREATER THAN 250' LENGHT)	DIMENSION A (FOR ALL OTHER BRIDGES)
90	11/4	11/4
60	13/4	11/2
35	2	1 ³ / ₄

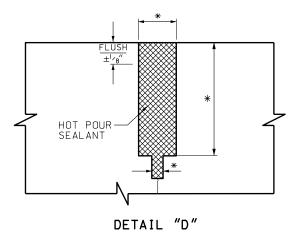
SEE NOTE 3



UTAH DEPARIMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RECOMMENDED FOR APPROVAL HAIRMAN STANDARDS COMMITTEE DEC.19.2 DEC.19.2 DEC.19.2 DEC.19.2 DEC.19.2 DEC.19.3
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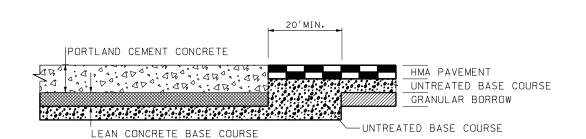






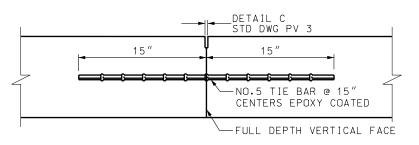
EXISTING SILICONE JOINT REHAB DETAIL

* ALL DIMENSIONS AS PER EXISTING PAVEMENT

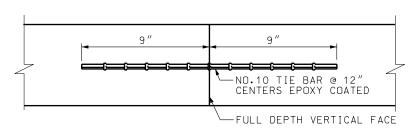


CONCRETE TO FLEXIBLE PAVEMENT TRANSITION DETAIL "E"

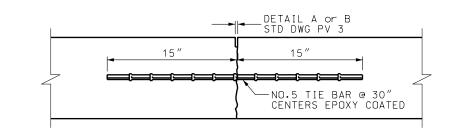
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S	CONCRETE PAVEMENT	SALT LAKE CITY, UTAH				
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D		KELUMMENUEU FUK AFFKUVAL				
W(AND INTERSTATE	JULY 03,2002				
3		CHAIRMAN STANDARDS COMMITTEE				
		3,2002 JULY 03,2002				
	STANDARD DRAWING TITLE	DEPUTY DIRECTOR DATE	NO, DATE APPR.	APPR.	REMARKS	
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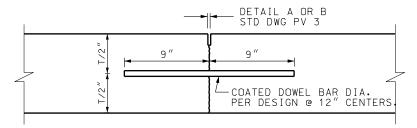
LONGITUDINAL CONTACT JOINT (CJ) DETAIL "A"



CONTACT JOINT DETAIL "B" FOR MID PANEL REPLACEMENT

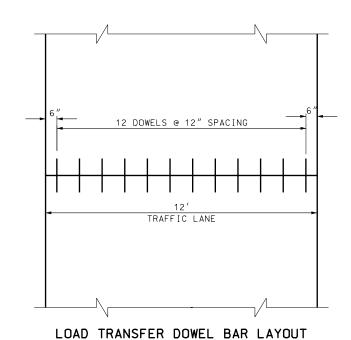


SAWED LONGITUDINAL JOINT DETAIL "C"

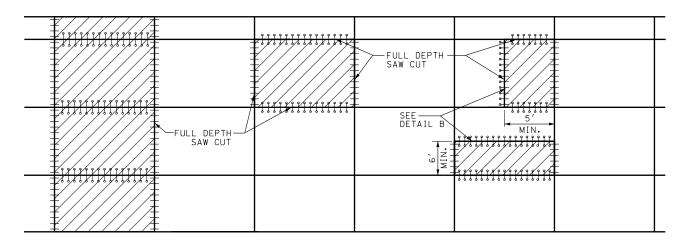


LOAD TRANSFER DOWEL BAR PLACEMENT TRANSVERSE JOINT DETAIL "D"

PROVIDE DOWEL BARS PARALLEL TO THE CENTERLINE AND TO THE PAVEMENT SURFACE ('4") LIMIT TO '4" DEVIATIONS FROM PARALLEL IN THE LENGTH OF THE DOWEL+BARS.



TYPICAL PAVEMENT PANEL REPLACEMENT



FULL WIDTH REPLACEMENT

- DOWEL BARS e 12" O.C.
- → TIE BARS @ 15" O.C. FOR CONTACT JT. @ 30" O.C. FOR SAWED JT.

FULL PANEL REPLACEMENT

- DOWEL BARS @ 12" O.C.

DOWELS - EPOXY COATED

→ TIE BARS @ 15" O.C.

PARTIAL PANEL REPLACEMENT

- → TIE BARS @ 15" O.C.

 DOWEL BARS @ 12" O.C.
- TIE BARS @ 12" O.C.

SMOOTH BAR $1\frac{1}{4}$ " × 18"

TIE BARS - EPOXY COATED

LONGITUDINAL SAWED NO.5 \times 30" DEFORMED REBAR LONGITUDINAL CONTACT NO.5 \times 18" " NO.10 x 18" TRANSVERSE

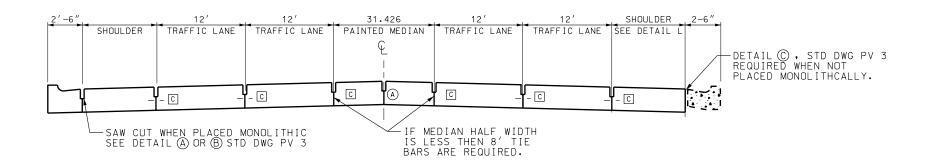
O.C. = ON CENTER

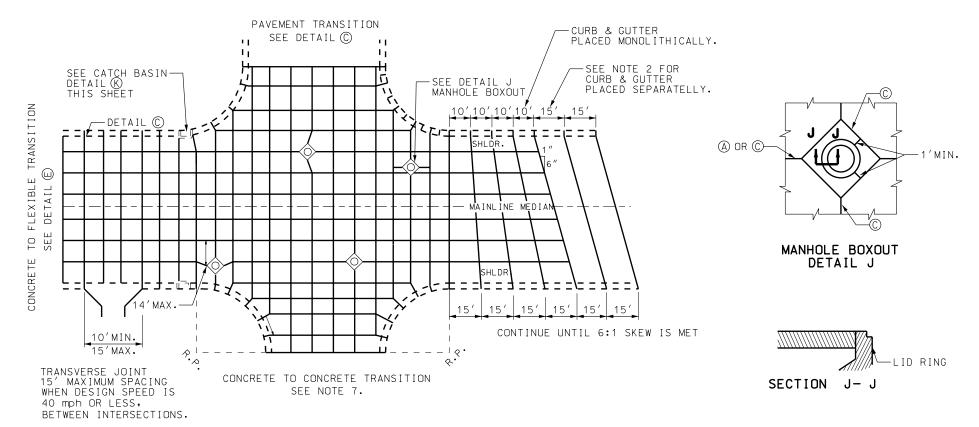
CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE

UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah

STD DWG

CONCRETE PAVEMENT DETAILS

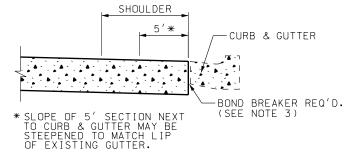




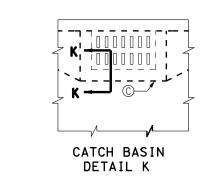
INTERSECTION JOINT LAYOUT

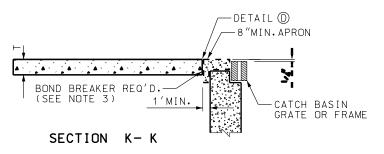
NOTES:

- 1. CURB & GUTTER JOINTS TO BE CONTINUOUS WITH PAVEMENT WHEN PLACED MONOLITHICALLY WITH PAVEMENT.
- 2. CURB & GUTTER JOINTS NORMAL TO THE FLOWLINE AND AT ONE HALF THE PAVEMENT JOINT SPACING, WHEN PLACED SEPARATELLY FROM THE PAVEMENT.
- 3. WHERE CONCRETE PAVEMENT IS PLACED AGAINST EXISTING CURB & GUTTER, DRIVEWAYS AND WALKWAYS PLACE A BOND BREAKER AS SHOWN IN DETAIL L AND SECTION K-K
- 4. REFER TO PROJECT SPECIFICATIONS FOR JOINT INFORMATION AND DETAILS.
- 5. PREFERRED TRANSVERSE JOINT LOCATIONS ARE:
 MORE THAN 5' FROM LARGE APPURTENANCES
 WITH NO BOXOUT: OR AT THE CORNER OF RECTANGULAR
 BOXOUTS OR APPURTENANCES.
- 6. WHEN A JOINT FALLS WITHIN 5' OF OR CONTACTS BASINS, MANHOLES, OR OTHER STRUCTURES, SHORTEN ONE OR MORE PANELS EITHER SIDE OF OPENING TO PERMIT JOINT TO FALL AT CORNERS OF RECTANGULAR STRUCTURES.
- 7. DETAIL C REQ'D. WHEN CROSS STREET IS CONCRETE AND AT STRUCTURES.
- 8. SEE STD DWG GW 3 FOR CURG & GUTTERS DETAILS.
- 9. SEE STD DWG GW 6 FOR DRIVEWAY DETAILS.
- 10. LETTER INSIDE () DENOTES DETAIL, STD DWG PV 3
- 11. LETTER INSIDE
 DENOTES DETAIL, STD DWG PV 4

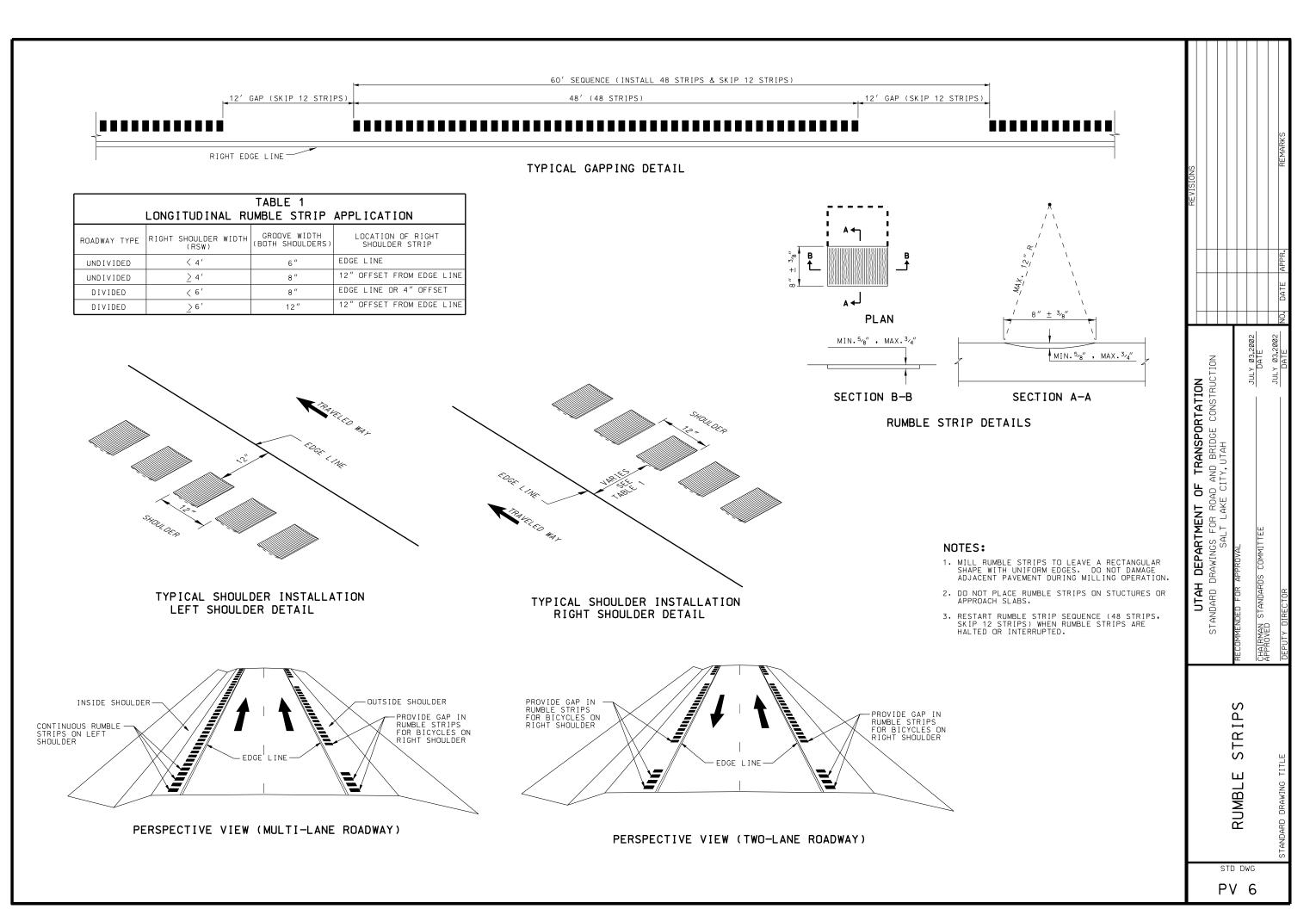


DETAIL L





Y Ø3,2Ø OF TRANSPORTATION
MAD AND BRIDGE CONSTRUCTI
E CITY, UTAH Ы UTAH DEPARTMENT OF Standard drawings for Road Salt Lake C URBAN CONCRETE PAVEMENT DETAILS



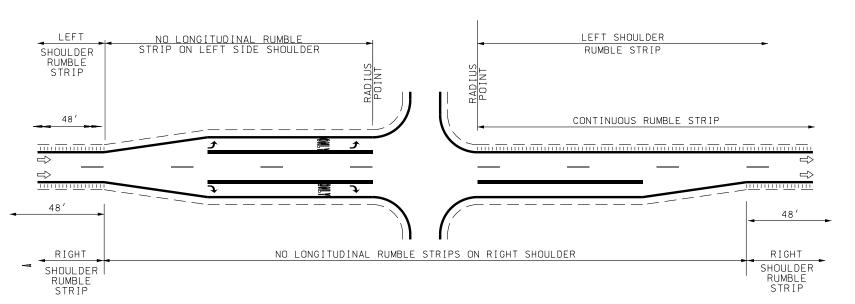
48′ 48′ Ų. OR ⇒ \Rightarrow 48′ 48′ 48' | 12' | 48′ NO LOGITUDINAL RUMBLE STRIP INSTALLATION ON HIGHWAYS WITH NO ACCESS CONTROL (SEE NOTE 4) TYPICAL HEAVY USE DRIVEWAY OR CROSSROAD EXCEPTION DETAIL CONTINUOUS RUMBLE STRIPS USE CONTINUOUS RUMBLE STRIP ON LEFT SHOULDER IN ONE WAY TRAFFIC SITUATIONS.

RAMP EXCEPTION DETAIL ENTRANCE RAMP SIMILAR

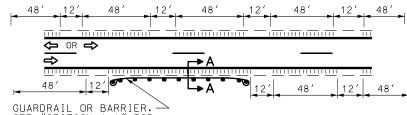
NO LONGITUDINAL

RUMBLE STRIP

GORE



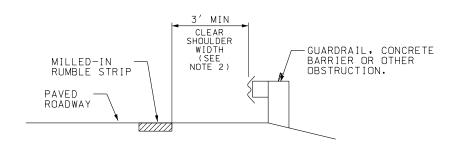
TYPICAL INTERSECTION, TURN LANE & ACCELERATION LANE EXCEPTION DETAIL



GUARDRAIL OR BARRIER. -SEE "SECTION A-A" FOR APPLICATION REQUIREMENTS.

TYPICAL GUARDRAIL AND/OR BARRIER

USE CONTINUOUS RUMBLE STRIP ON LEFT SHOULDER IN ONE WAY TRAFFIC SITUATIONS.



SECTION A-A ROADSIDE BARRIER EXCEPTION

SEE NOTE 3

NOTES:

- 1. OMIT RUMBLE STRIPS ACROSS PRINCIPAL INTERSECTING ROADWAYS AS PER DETAILS.
- 2. IF BICYCLE TRAFFIC EXISTS OR IS ANTICIPATED THEN PROVIDE A MINIMUM EFFECTIVE CLEAR SHOULDER WIDTH OF 3 FEET. APPLY THIS REQUIREMENT TO BOTH SHOULDERS OF UNDIVIDED HIGHWAYS AND THE RIGHT SHOULDER ONLY ON DIVIDED HIGHWAYS.
- 3. MAINTAIN 3 FEET MINIMUM CLEAR SHOULDER WIDTH BETWEEN OBSTRUCTION AND INSIDE EDGE OF RUMBLE STRIP, OTHERWISE ELIMINATE RUMBLE STRIP.
- 4. ON HIGHWAY WITH NO ACCESS CONTROL PLACE RUMBLE STRIP AS PER STD DWG PV 6.

								REMARKS
								NO. DATE APPR.
UTAH DEPARTMENT OF TRANSPORTATION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH		KECUMMENDED FUK APPROVAL	JULY 03,2002	CHAIRMAN STANDARDS COMMITTEE	JULY 03.2002	DEPUTY DIRECTOR DATE N
			RUMBLE STRIPS -	1/01/07	M ILLICHE HEFEICHIION			STANDARD DRAWING TITLE
		s F	TD '\	ים /	wG 7	,		

FRONT VIEW TOP VIEW FRONT VIEW SIDE VIEV DESIGN INFORMATION COUNTERSUNK 20 UN RECESSED 3'-4"TYP-3'-4"TYP-3'-4"TYP 75 LBS TYP 75 LBS TYP 75 LBS TYP 40'MAX.TYP 40'MAX.TYP 40'MAX.TYP 40'MAX.TYP FLUSH HAND HAND HOLE COVER LATCH FLUSH HAND HOLE CASTING DETAIL HOLE COVER 3' ATTACH LATCH & COVER TOGETHER WITH $^{1}\prime_{4}^{\prime\prime}\times$ 2"-20 UN FLAT HEAD BOLT. END OF BOLT TO BE PEENED. 0 4'-2"TYP 4'-2"TYP 25'& 30'MAST ARMS 60'& 65' 50'& 55' MAST ARMS '**,**40'& 45' MAST ARMS MAST ARMS PROJ. - AREA (FT)2 WEIGHT (LBS) DEVICE DESCRIPTION ' SECTION WITH 6 " BACK PLATE 10 55 $0.0.2^{3/8}$ REGULATORY 2' X 2' 20 LUMINAIRE ARM STREET NAME 1 43 CONNECTION 15"R REMOVABLE STEEL CAP (DROP FORGED) JULY 03,200 DATE - <J'HEX HEAD CAP SCREW ASTM A 325 WITH POLE | FLANGE DRILLED AND TRANSPORTATION AND BRIDGE CONSTRUCTION TY, UTAH X 1/2" 20 UN SET SCREW - 1/8" REQUIRED INSIDE DIA. MUST EXCEED OUTSIDE POLE DIA. BY 1/8". STEEL POLE CAP DETAIL 2" STD. PIPE WIRING TUBE 21/2" DIA. 4" I.D. HOLE ON ARM FLANGE HE I GHT -SIGNAL ARM LENGTH DNA 7 -4" X 61/2" FLUSH HAND HOLE CASTING WITH COVER -SEE STD DWG SL 2 FOR SIGNAL ARM DETAILS ING Ы -³/₈″LP (.375) TOP BOTTOM & SIDES ARM THICKNESS ARM THICKNESS + 1/16" DEPARTMENT ∠L' POLE FLANGE ∠M' ARM FLANGE -6³⁄₄″ B.C. SIGNAL ARM CONNECTION NOTE: 78"DIA FOR 34" BOLTS OR STUDS. (8) HOLES EQUALLY SPACED SO LUMINARE ARM CAN BE ROTATED 1. DESIGN POLES & ARMS TO MEET AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORT FOR HIGHWAY SIGN. LUMINARES & TRAFFIC SIGNALS (CURRENT EDITION) FOR AN 80 MPH WIND WITH 4" X 6 $^{\rm I}{\scriptstyle \sim}$ " HAND HOLE WITH .375" PL. X 2" REINFORCING FRAME AND COVER IN 45° INCREMENTS. UTAH 1/2" 13 UNC CAP 2. DESIGN STEEL POLE & ARMS USING A MAXIMUM ALLOWABLE STRESS OF 48,000 PSI STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,00 PSI WITH NO CREDIT ALLOWANCE FOR COLD WORKING. FOR GROUNDING 3. HOT DIP GALVANIZE ALL STRUCTURAL STEEL AFTER FABRICATION IN ACCORDANCE WITH ASTM A 123. 2" PLATE

- 4. TUBE DIAMETERS TOLERANCE OF ±+ 1/6".
- 5. KEEP ALL GALVANIZED STEEL THREADS FREE FROM DEFECTS, ALLOWING NUTS TO BE FREE RUNNING BY HAND FOR THE ENTIRE LENGTH OF THREADS.
- 6. DESIGN WELDING & FABRICATION IN ACCORDANCE WITH CURRENT AWS SPECIFICATION D 1,5 SECTION 1 THRU 8.
- 7. INSTALL DUALL MAST ARM POLE ASSEMBLY AT 90°.
- 8. BAND ALL INSULATORS.
- 9. DESIGN POLES & ARMS WITH CIRCULAR CROSS SECTIONS.
- 10. DIMENSION COUPLING AND TENON AS SHOWN, NO SUBSTITUTIONS ALLOWED.
- 11. PREPARE SHOP DRAWINGS.
- 12. ALL SHOWN UNLOADED-NO DEAD OR LIVE LOAD.
- 13. GRIND FLUSH ALL BUTT OR GROVE WELDS.

TRAFFIC SIGNALS

MAST ARM POLE AND

LUMINAIRE EXTENSION

STANDARD DRAWING TITLE

STANDARD DRAWING TITLE

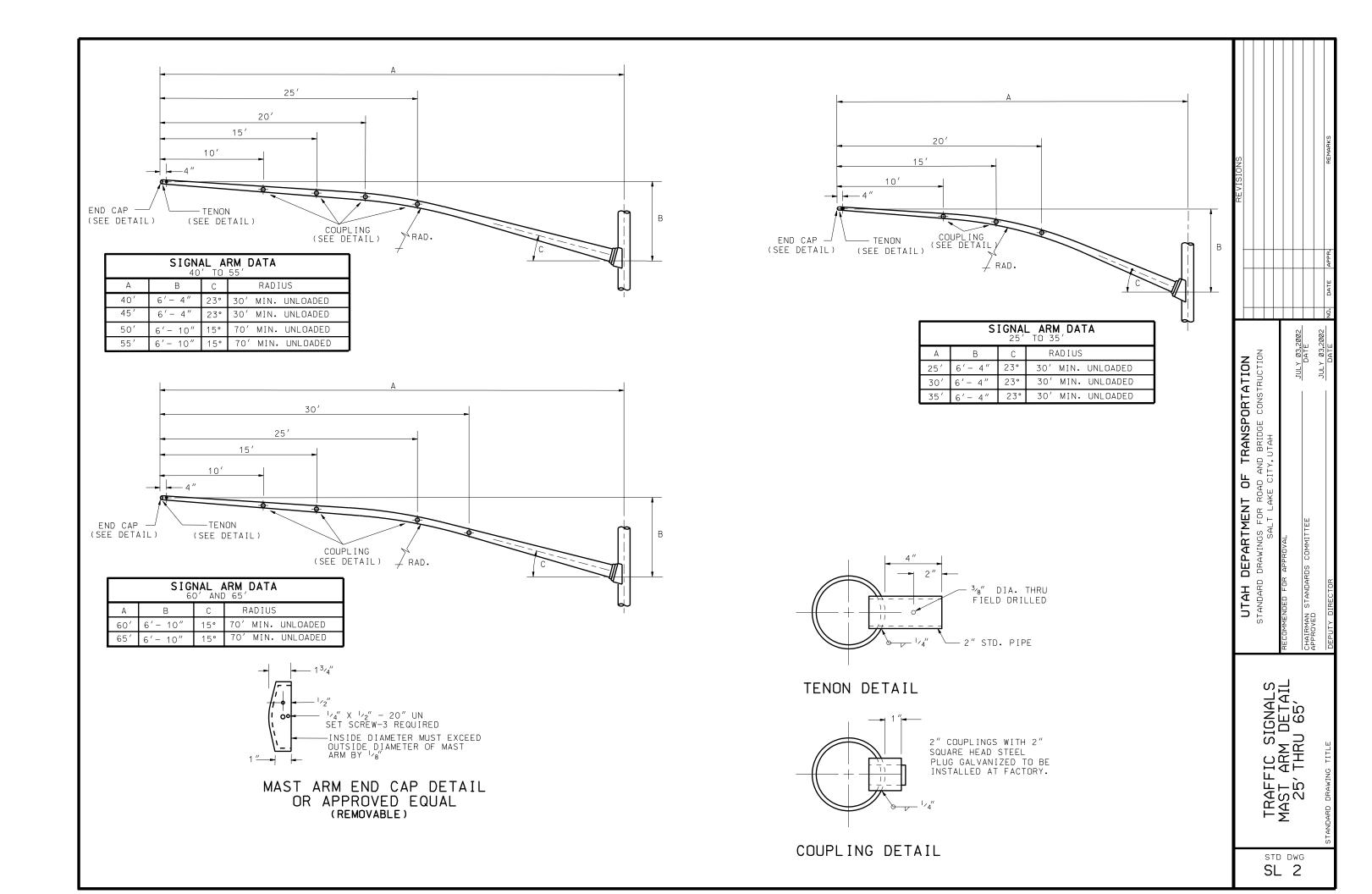
FOR FOUNDATION REQUIREMENTS SEE STD DWG SL 4

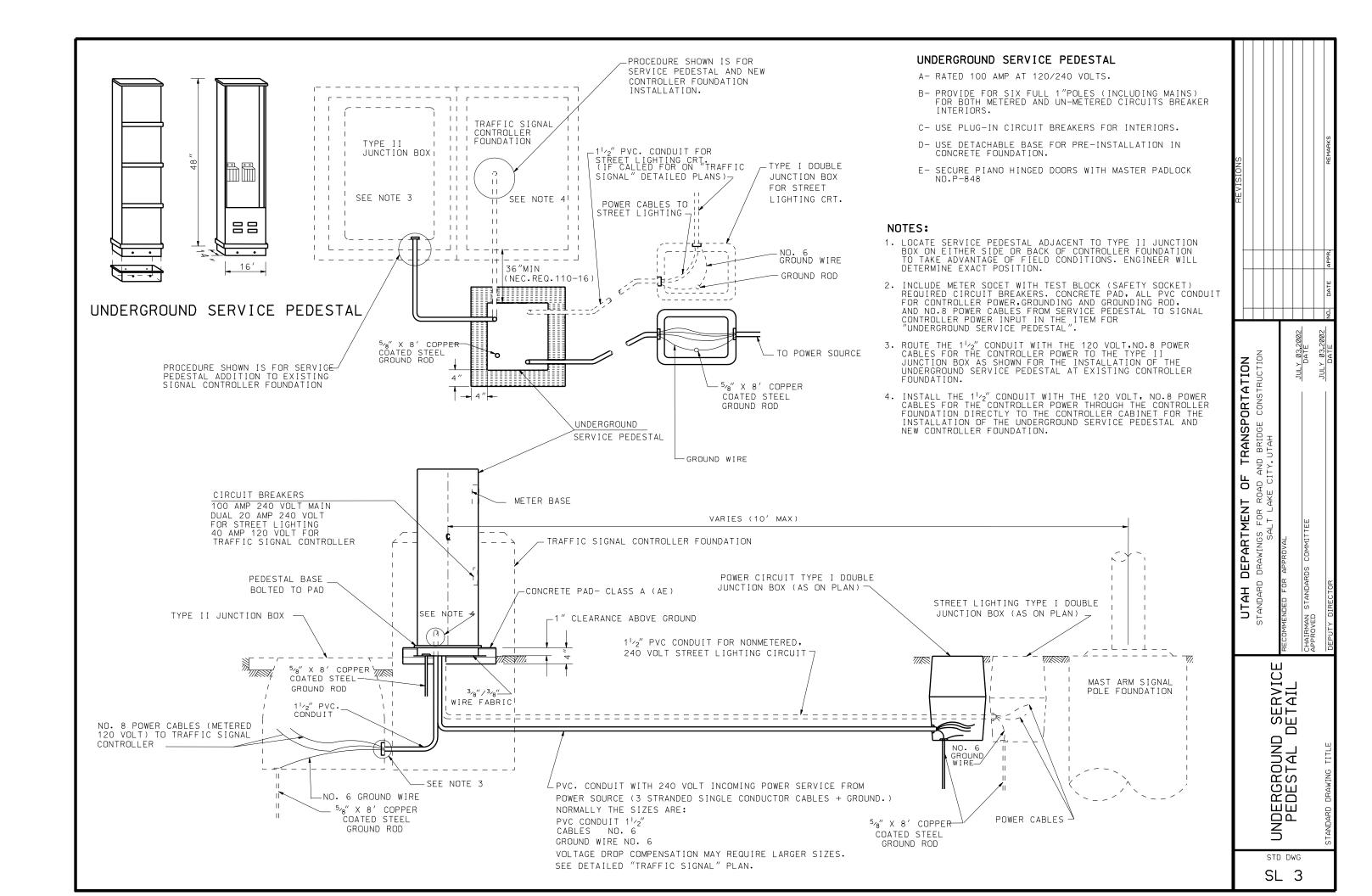
ARM LENGTH	D	J	K	L	М
25' TO 45'	20'- 4"	11/4" - 7 NC X 3"	14"	11/2"	11/2
50' TO 65'	20'- 10"	$1^{1}/_{2}^{"}$ - 6 NC X 4"	16"	2"	2"

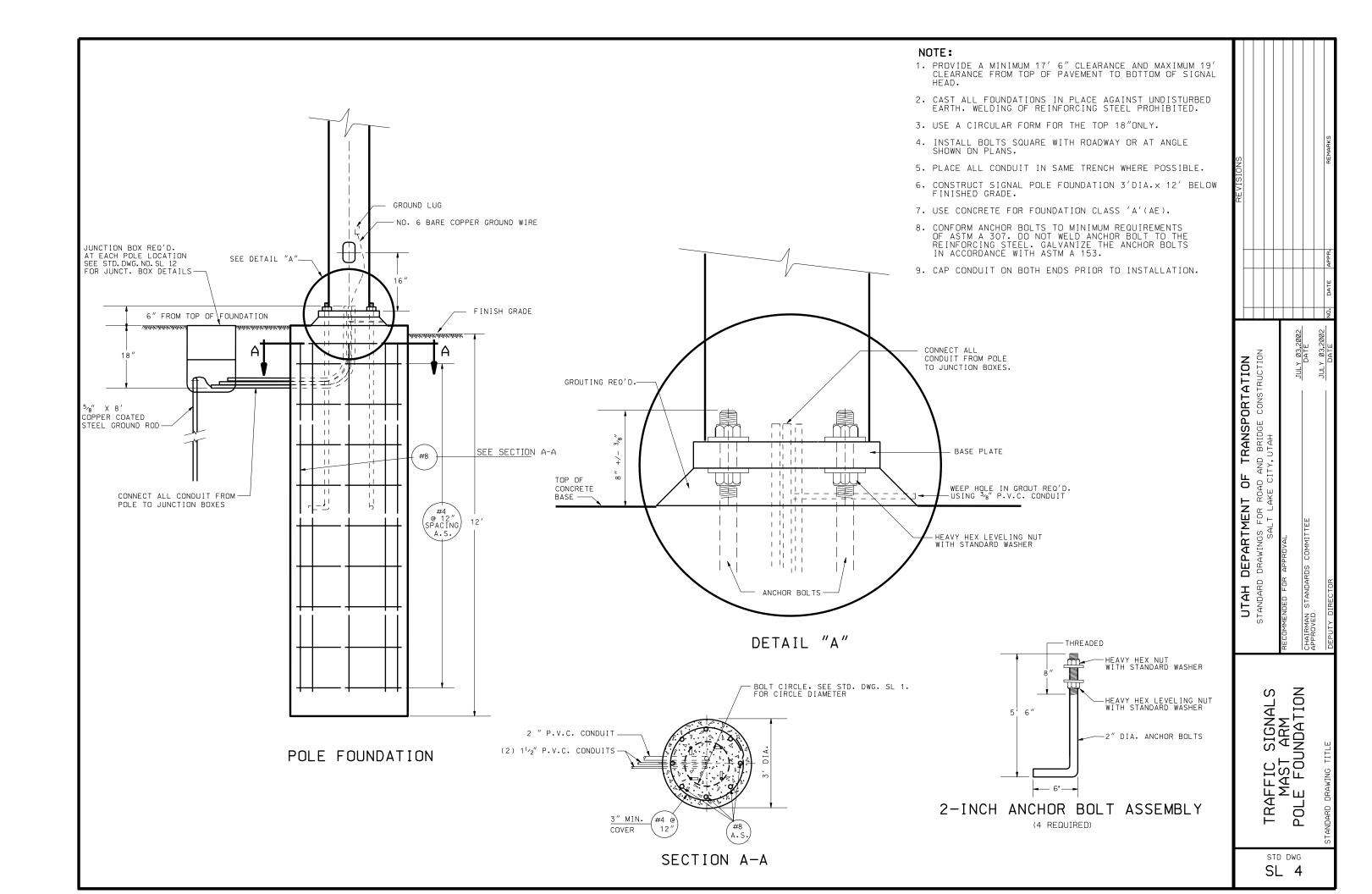
BASE DETAIL

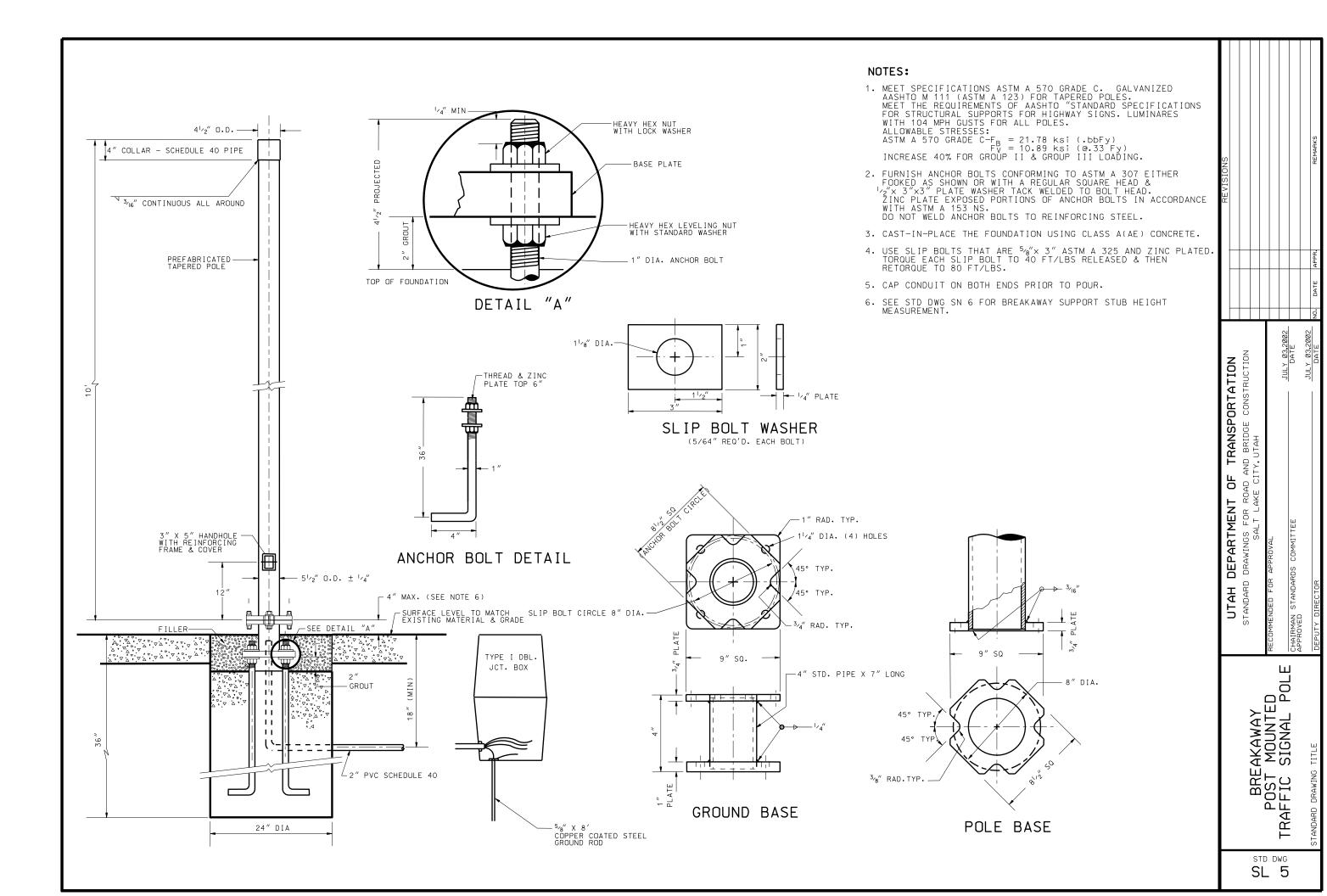
1'-7"B.C-

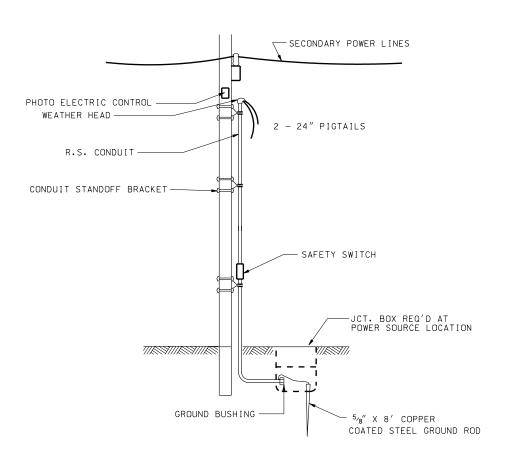
21/4" WIDE X 21/2" LONG-







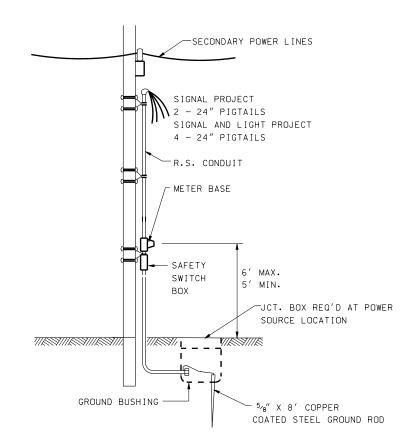




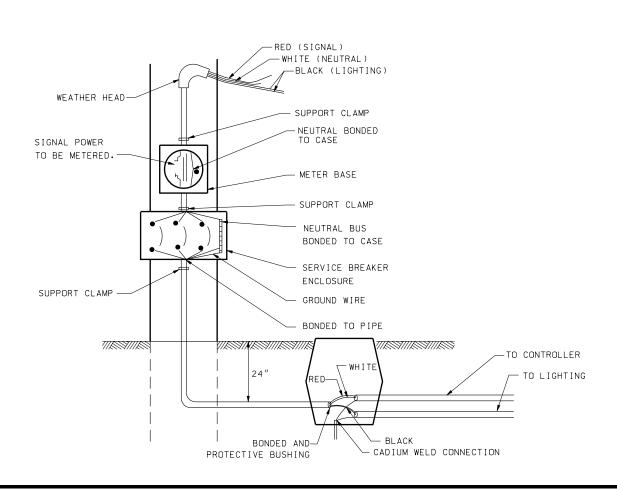
STREET LIGHTING POWER SOURCE

NOTES:

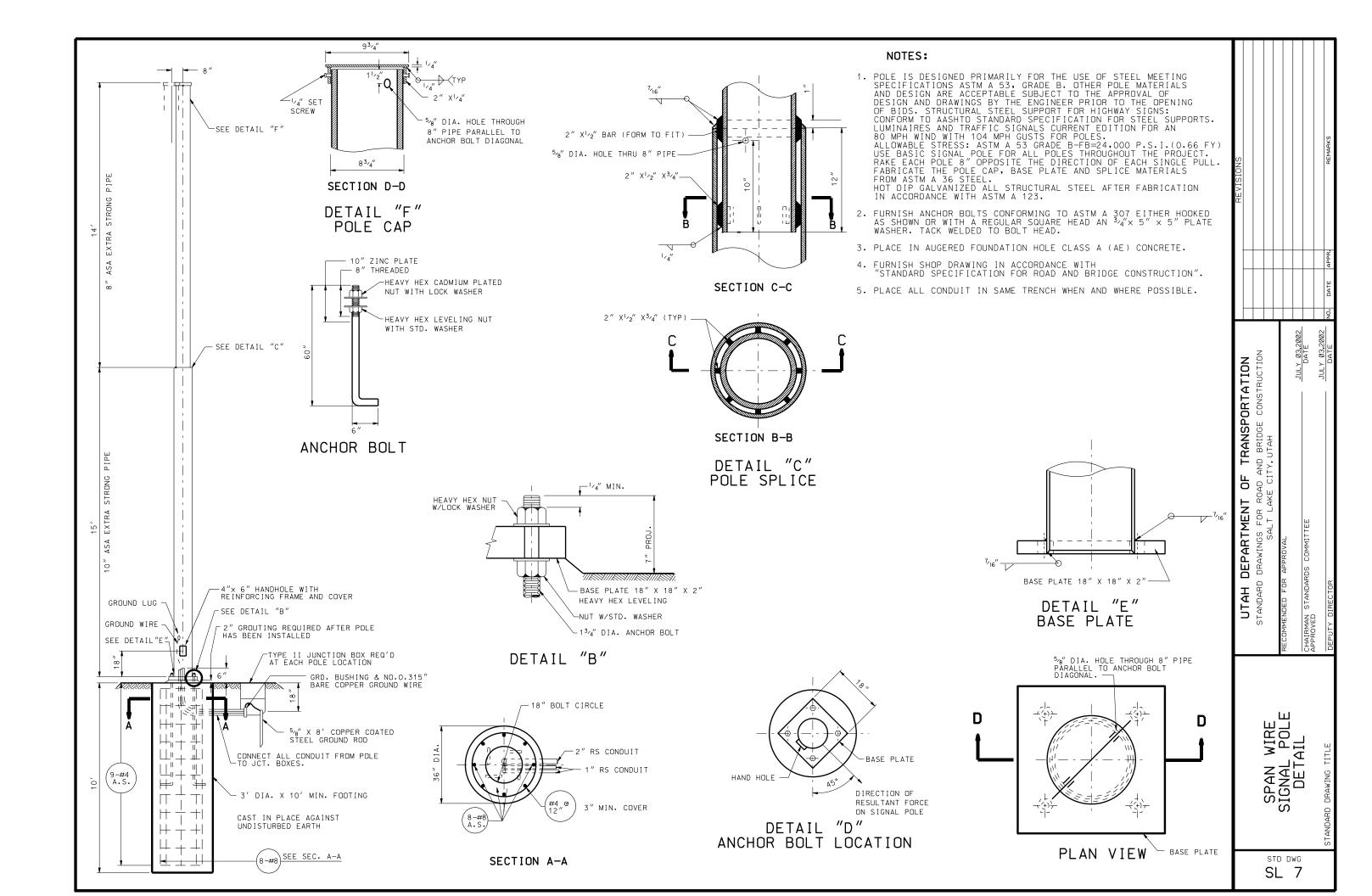
- 1. STREET LIGHTING CIRCUIT REQUIRES DUAL 20 AMP CIRCUIT BREAKER SUITABLE FOR USE ON SERVICE EQUIPMENT.
- 2. SIGNAL CIRCUIT REQUIRES 40 AMP CIRCUIT BREAKER SUITABLE FOR USE ON SERVICE EQUIPMENT.
- 3. USE SINGLE CONDUCTOR COPPER CABLE NO.6 AWG TYPE RHH-USE-RHW FOR ALL CONDUCTORS.
- 4. USE EUSERC APPROVED CLAMP-JAW BY-PASS RELEASE METER SOCKET ON METER BASE. (REQ. ON SIGNAL PROJECTS ONLY)
- 5. USE A 3-POLE NEMA TYPE 3R AND SUPPLIED WITH A MASTER PADLOCK NO.P-848 ON ALL SAFETY SWITCH BOXES.
- 6. PLACE ALL CONDUIT IN THE SAME TRENCH WHERE POSSIBLE.
- 7. FURNISH AND INSTALL AS SHOWN.
- 8. USE NO.6 BARE COPPER GROUND WIRE.

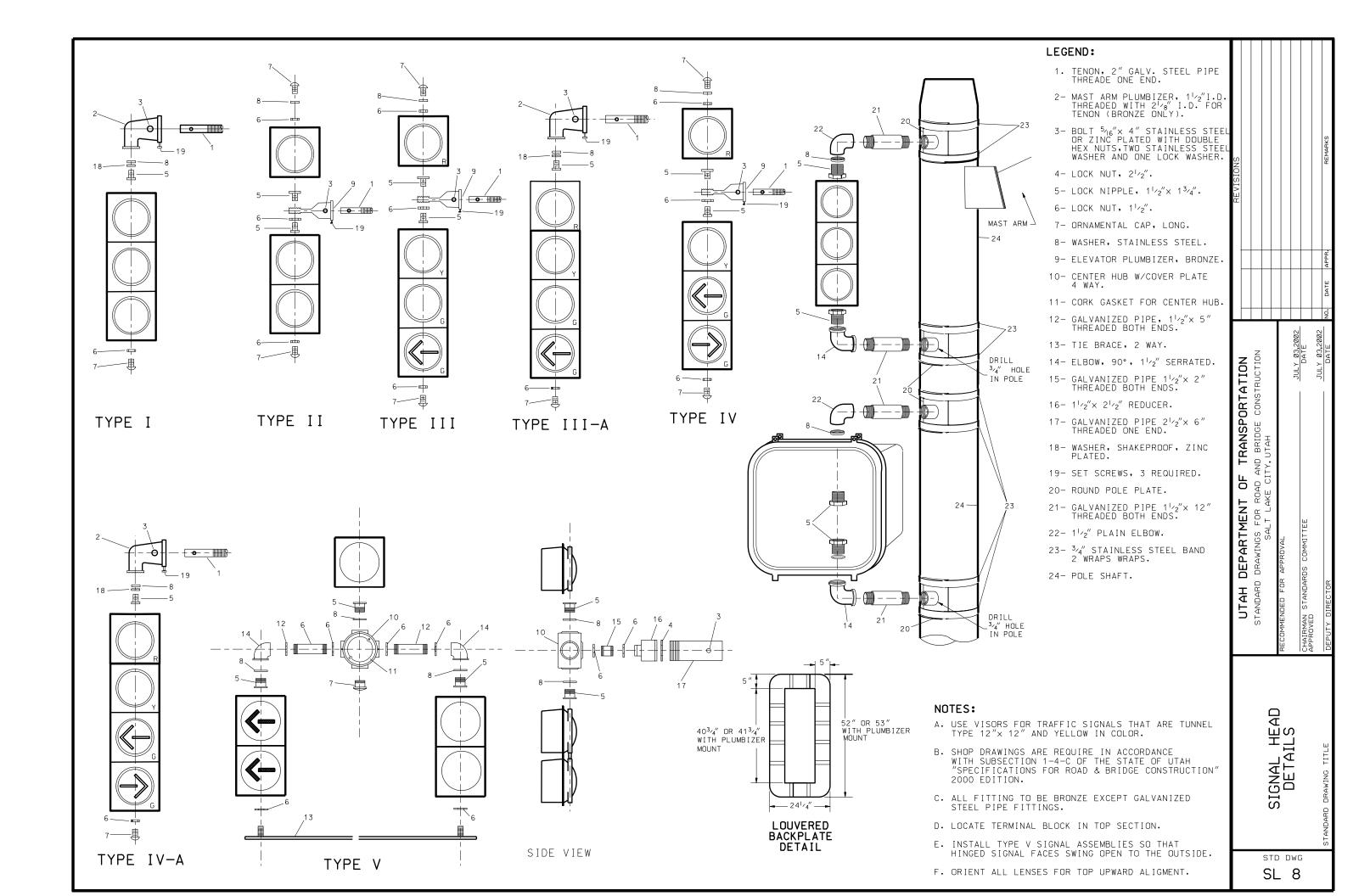


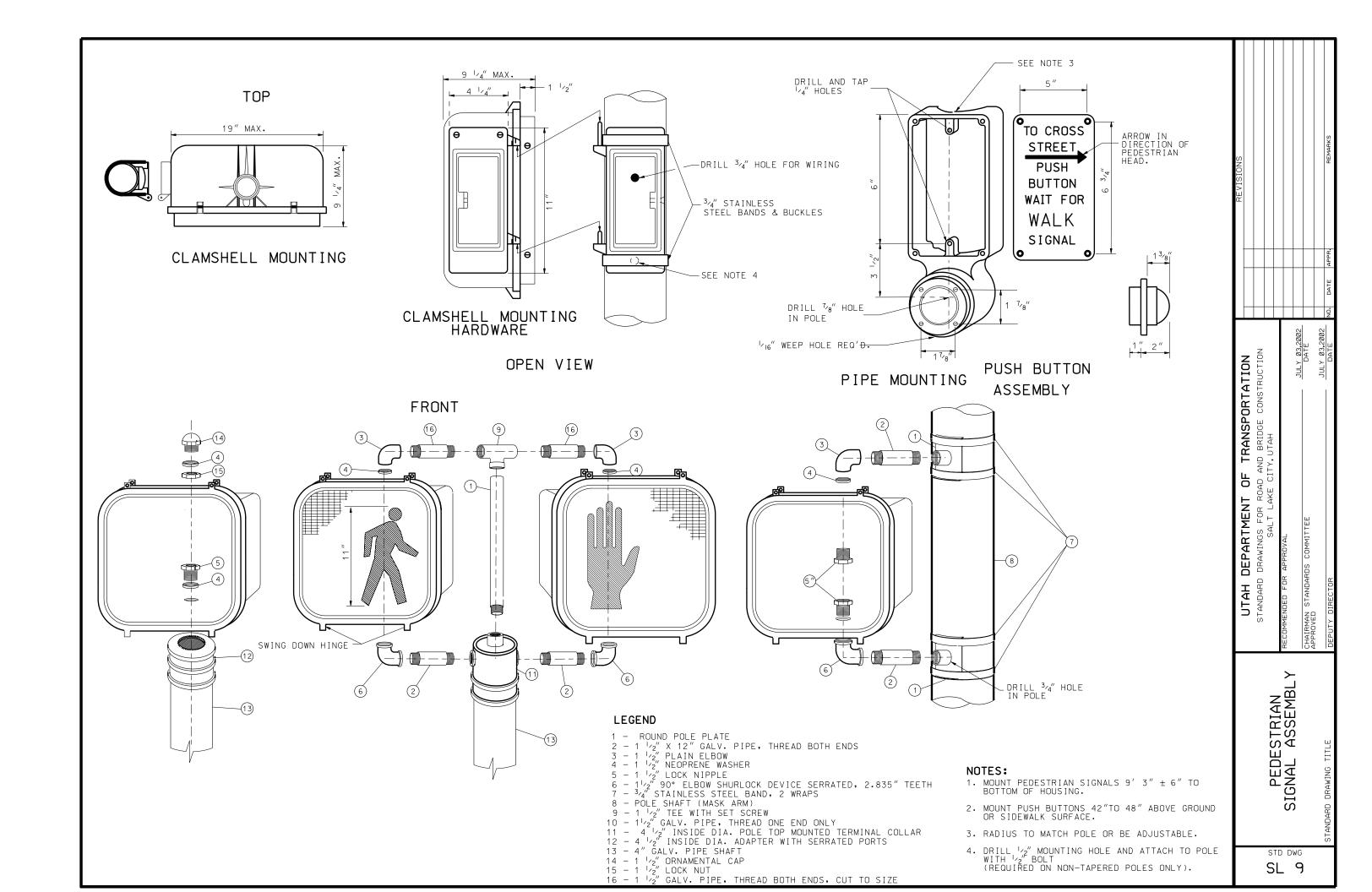
SIGNAL AND LIGHTING POWER SOURCE

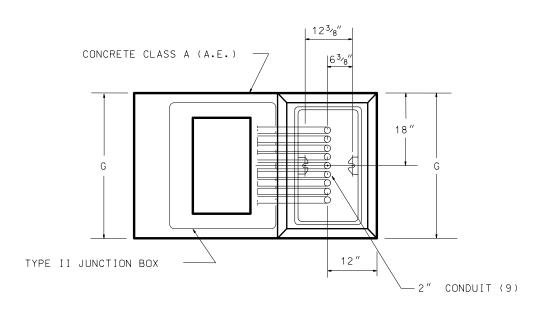


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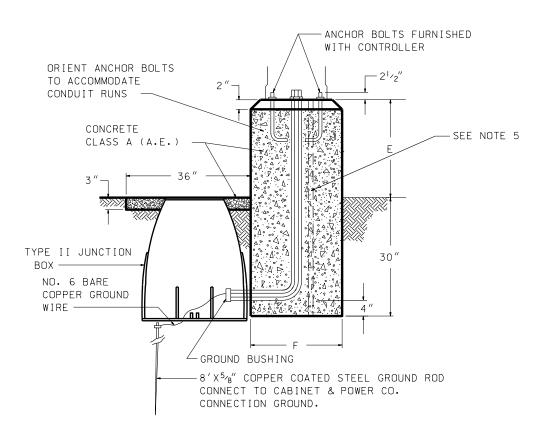






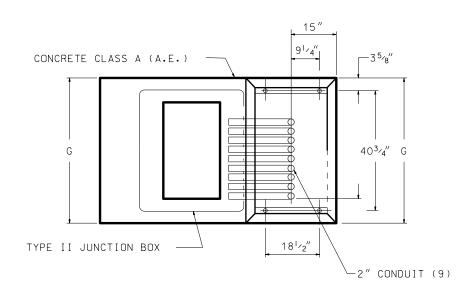


TYPE 5 CABINET BASE

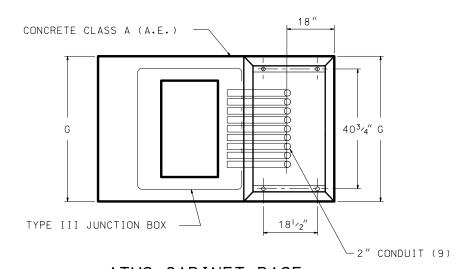


NOTE: THE ABOVE PROFILE DRAWING IS TYPICAL OF THE TYPE 5, TYPE 6 AND ATMS CABINET BASE.

CABINET	E	F	G
TYPE 5	22"	24"	36"
TYPE 6	22"	30"	48"
ATMS	22"	36"	36"



TYPE 6 CABINET BASE



ATMS CABINET BASE

NOTES:

- 1. ATTACH THE GROUNDED SIDE OF THE POWER SUPPLY TO THE CONTROL CABINET GROUND TERMINAL.
- 2. INSTALL ALL WIRING IN A NEAT AND FIRM MANNER.
- 3. MAINTAIN A 1"MIN SPACING BETWEEN CONDUITS IN A CABINET BASE, CAP CONDUITS AT BOTH ENDS UNTIL USED.
- 4. IDENTIFY AND LABEL ALL FIELD TERMINALS.
- 5. GROUND CABINET WITH A 10' \times $^{3}4''$ copper coated steel ground rod placed in a 1 $^{1}2''$ pvc conduit foundation sleeve.
- 6. PLACE ALL CONDUIT IN THE SAME TRENCH WHERE POSSIBLE.

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STD DWG

NOTES: 1. REPLACE TRENCHING MATERIAL REMOVED FOR DETECTOR CIRCUIT INSTALLATION WITH P.V.C DETAIL SAW CUT DETAIL (CONCRETE) (ASPHALT) SPECIFIED MATERIAL WITHIN 8 HOURS. 2. INSTALL ALL CONDUITS IN SAME TRENCH WHERE 3. INSTALL ALL CONDUCTORS IN SAW CUT PLACE CABLE OR WIRE AT BOTTOM OF DRY SLOT. USE EPOXY SEAL WHICH DOES NOT CONTAIN ACETONE SOLVENT TO CLOSE - ROAD SURFACE ROAD SURFACE 6" MIN.COVER - JUNCTION BOX -JUNCTION BOX LANE LINES LANE LINES SAW CUT. 4" MIN. 6" MAX. 4. USE 4 TURNS OF SINGLE CONDUCTOR #14 CABLE ON ALL LOOPS 6' X 12' AND SMALLER. USE 3 TURNS OF #14 CABLE ON ALL LOOPS 6' X 14' AND LARGER. DEPTH OF CONDUIT MIN.COVER -3/4" DIA. SCH. 40 PVC CONDUIT 6" MIN. COVER OF LOOP WIRE SOLVENT WELD g" DIA. SCH. 40 PVC CONDUIT WITH DIA. SCH. 40 PVC CONDUIT INSIDE 5. SEE PLAN SHEETS FOR DETECTOR LOOP LOCATION. STATION AND OFFSET GIVEN FOR THE CENTER OF LOOP. SECTION B-B GRANULAR GRANULAR BACKFILL BACKFILL SECTION D-D BORROW BORROW 6. USE A SEPARATE WIRE FOR EACH LOOP HOME RUN. USE CONTINUOUS WIRE FOR EACH LOOP. DO NOT USE SPLICES EXCEPT AT THE JUNCTION BOX WHERE THE LEAD-IN WIRE CONNECTS TO THE HOME RUN. DO NOT SPLICE THE LOOP CABLE, LEAD-IN CABLE, OR THE HOME RUN SIZE, LOCATION & _NUMBER OF LOOP TURNS _AS SPECIFIED IN NOTES SIZE, LOCATION & NUMBER OF LOOP TURNS AS SPECIFIED IN NOTES 4 & 5 ON PLANS. SAW CUT 1_{2} MAX. WIDE X 3" MIN. COVER FILL WITH EPOXY (SEE NOTE 3) MAXIMUM TRENCH WIDTH 6" FOR BOTH CROSS TRENCH AND LOOP TRENCH 4 & 5 ON PLANS. CABLES. TAG AND NUMBER EACH LOOP WIRE IN CONFORMANCE WITH THE DESIGN. PLACE LOOP DETECTOR WIRE COUNTER CLOCKWISE. TACK COAT TRENCH AND ROAD SURFACE ROAD SURFACE BACKFILL WITH HOT MIX 7. USE ONE TWIST PER FOOT IN SAW CUTS AND THREE TWISTS PER FOOT IN CONDUIT FOR LOOP DETECTOR IN TRENCH "A". ASPHALT. TRANSPORTATION AND BRIDGE CONSTRUCTION IY, UTAH SECTION C-C SECTION E-E 8. USE DETAIL AS INDICATED ON PLANS. 9. INSPECT AND TEST ALL LOOPS. RESISTANCE TO GROUND MUST BE GREATER THAN 200 MILLION OHMS AT 6000 VOLTS DO NOT EXCEED 0.8 OHMS SERIES RESISTANCE. —SEE DETAIL "A" PF CURB & GUTTER DEPARTMENT OI 2' MIN. FROM GUTTER NOTES 6 & 7 PARKING OR SHOULDER STOP BAR -LANF LINES UTAH SEE NOTES 2' MIN. 10 3, 4, 5 AND 6 SEE DETAIL "A" ISLAND CURB & GUTTER \1'/2" DIA.SCH.40 PVC CONDUIT WITH³/4" DIA. SCH.40 PVC CONDUIT INSIDE TO BE EXTENDED -2' MIN. FROM GUTTER WATERPROOF SPLICE KIT. PARKING OR SHOULDER DETECTOR CIRCUIT (2 CONDUCTOR NO. 14 SHIELDED POLYETHYLENE INSULATED CABLE) (SPLICE IN BOX ONLY BY JUST BEYOND CURB OR TO EDGE OF OIL. TRENCH "A" LICENSED ELECTRICIAN) SEE NOTES 6 & 7 LOOP DETECTOR (SINGLE CONDUCTOR NO. 14 STRANDED INSULATED WIRE) SEE NOTES 4 & 5 LANE LINES CONDUIT TO CONTROL CABINET √3/4" DIA.SCH.40 PVC CONDUIT STOP BAR 2' MIN. SEE NOTES 3, 4, 5, AND 6 ISLAND ONLY PVC ELECTRICAL CONDUIT FITTING CAN BE USED. CONDUIT TO LOOP

WATERPROOF BUSHINGS OR ACCEPTABLE CAULKING

DETAIL "A"

COMPOUND

JULY 03,2002 DATE

CHAIRMAN APPROVED

SIGNALS ETECTOR AIL

TRAFFIC LOOP DE DET

STD DWG SL 11

AND ITY, L

" X 2¹/₂" BOLT DOWN PLACE FOR TYPE I-P 2 PLACES FOR TYPE II-P) LIFT SLOT LOGO AREA HINGE LOCK ANCHOR TABS (4)

PLASTIC JUNCTION BOX

-CEMENT NAIL

ROOFING PAPER

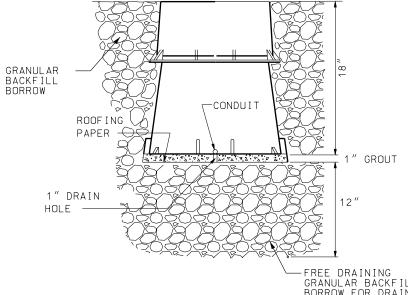
1" DRAIN HOLE

BOX AND LID DIMENSIONS

(INCHES)

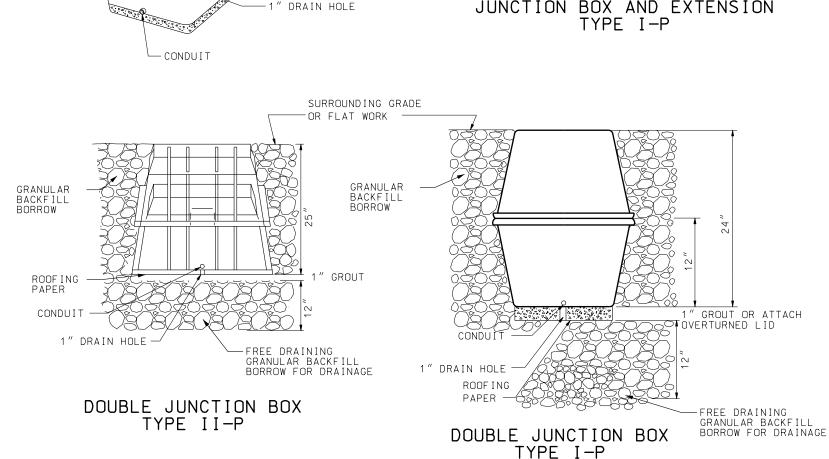
BOX TYPE	L	W	Н	BL	ВW	Τ	Χ	Υ	Ζ
I -P	17	$11^{3}/_{4}$	12	19 ¹ / ₄	14	- _{/4}	15 ³ / ₈	10 ¹ / ₈	1 ³ / ₄
II-P	25 ¹ / ₄	16	15	29 ³ / ₄	20	1/4	231/4	13 ³ / ₄	2

NOTES: ALL DIMENSIONS LISTED ARE MINIMUM.



JUNCTION BOX AND EXTENSION TYPE I-P

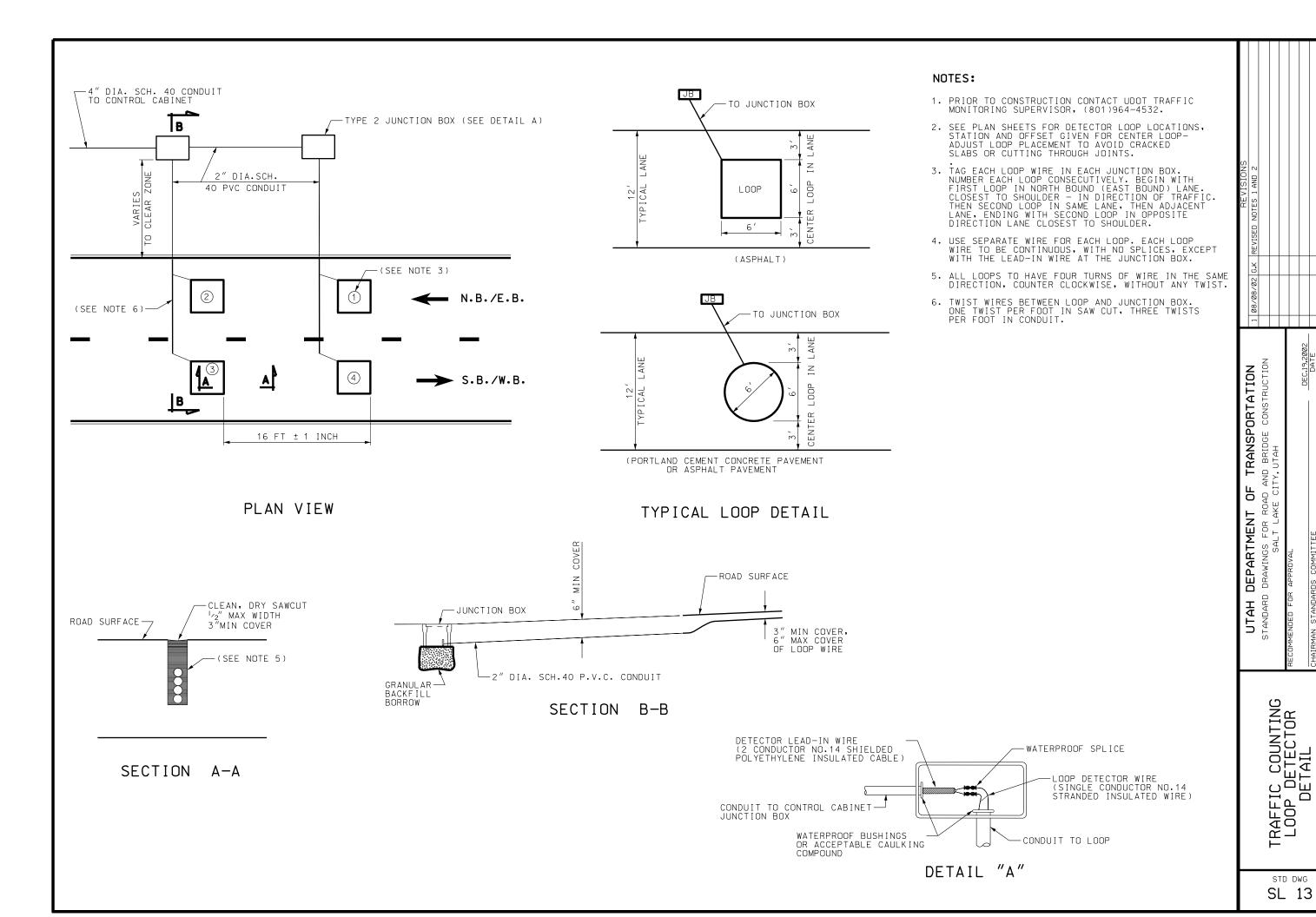
FREE DRAINING GRANULAR BACKFILL BORROW FOR DRAINAGE

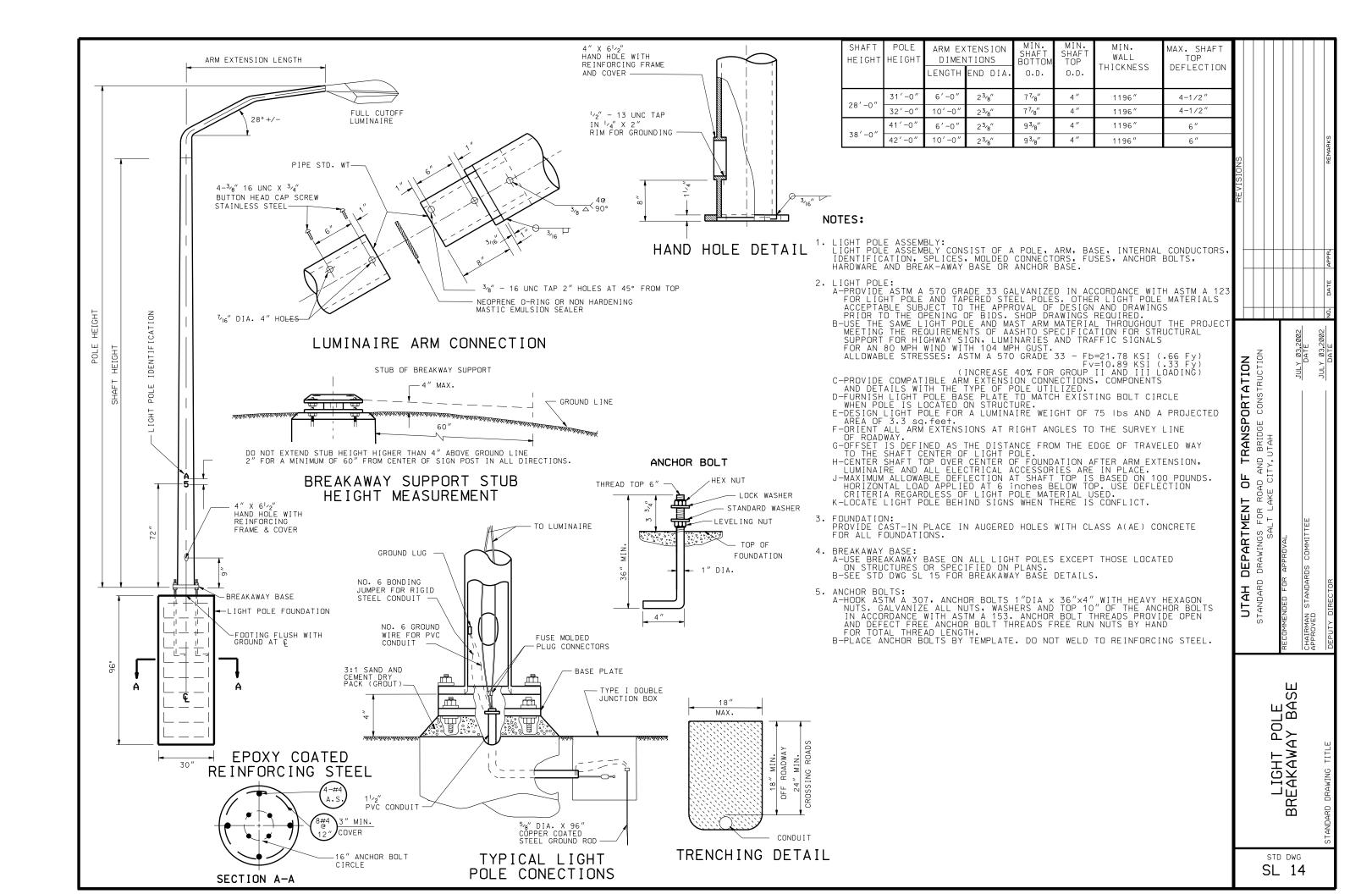


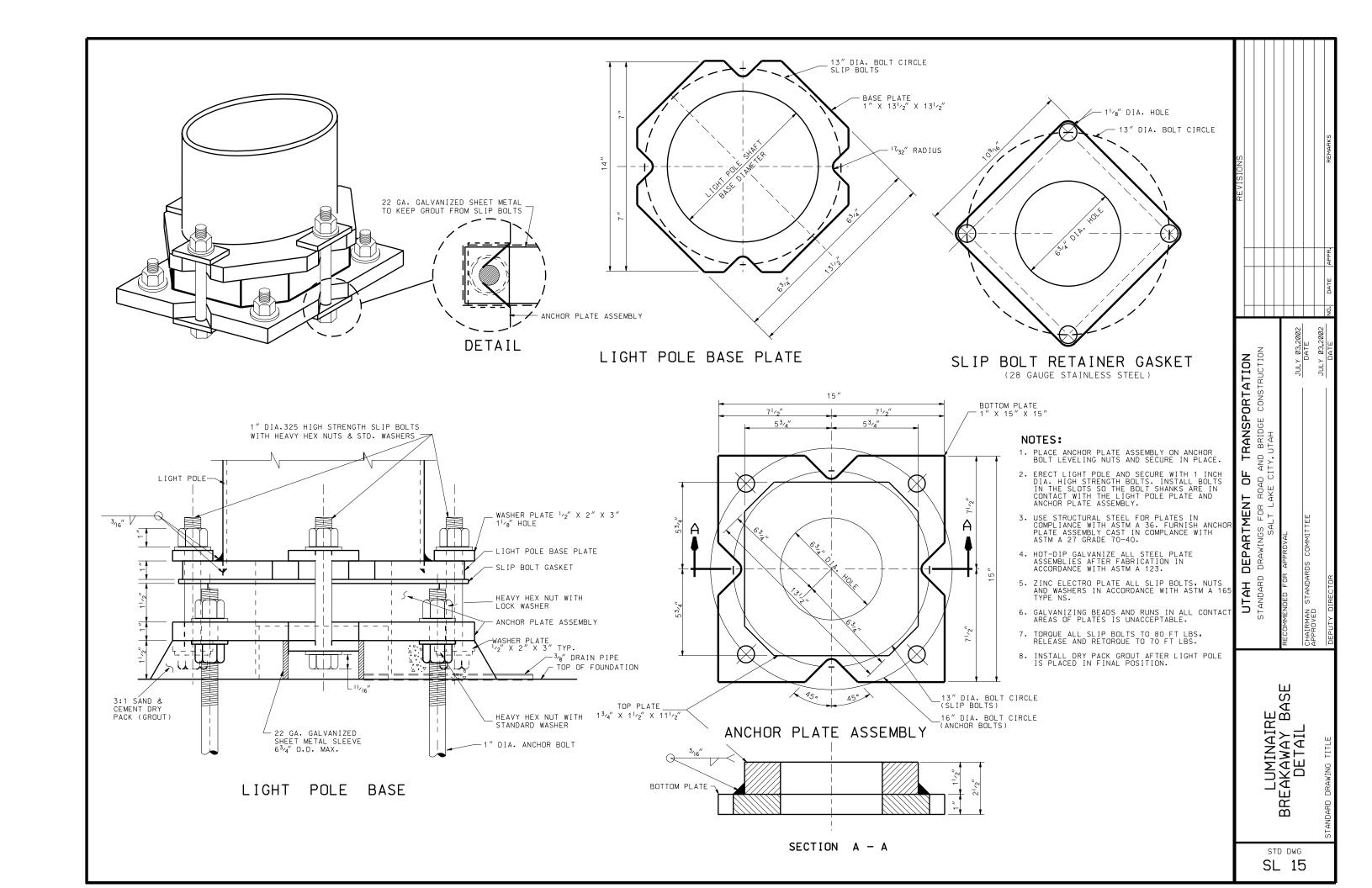
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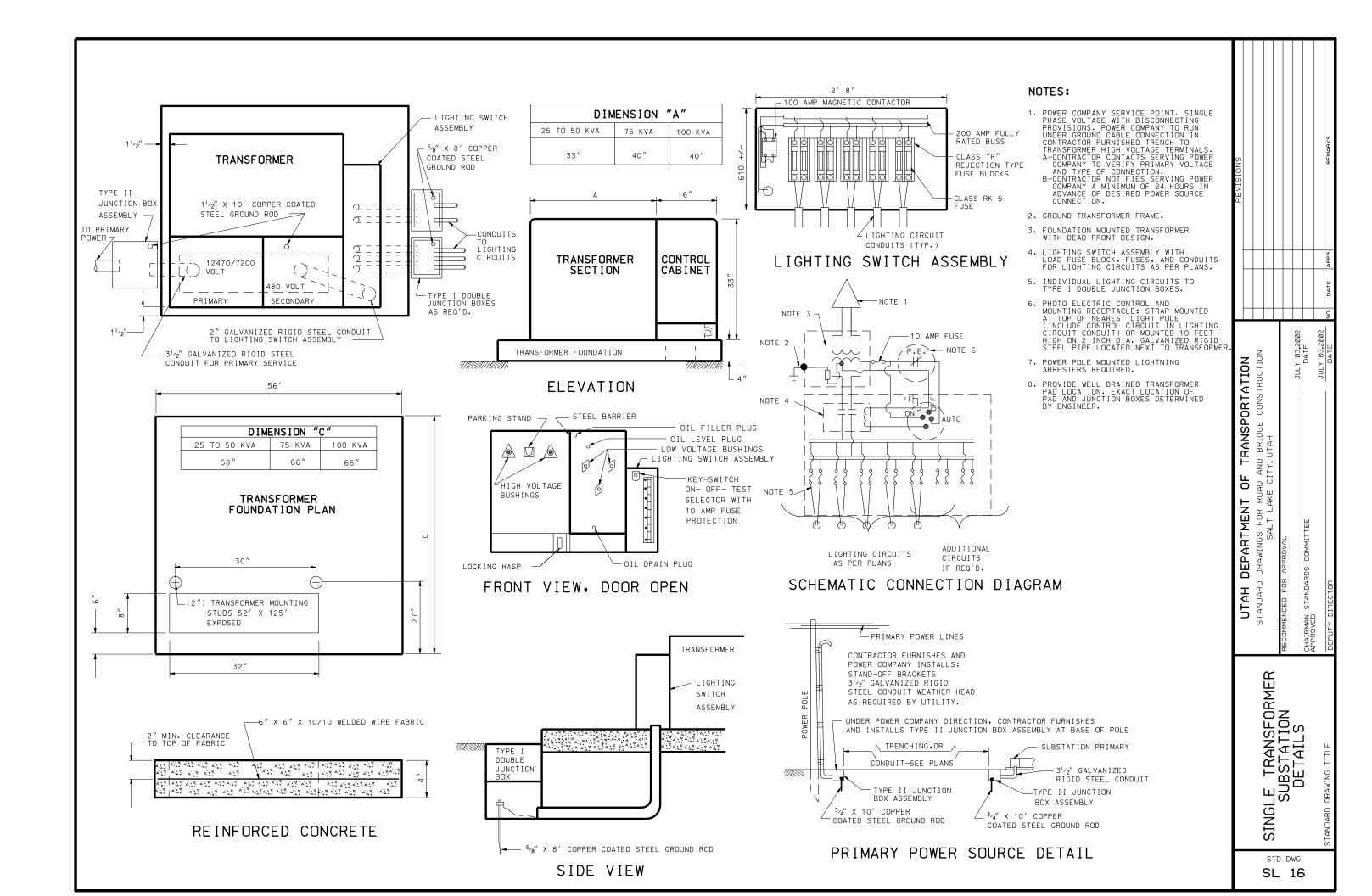
- 1. PROVIDE SEALING COMPOUND ON ENDS OF EACH CONDUIT RUN.
- 2. OTHER JUNCTION BOXES ACCEPTABLE SUBJECT TO APPROVAL BY THE ENGINEER.
- 3. USE GRANULAR BACKFILL WELL TAMPED AROUND JUNCTION BOXES.
- 4. CAST CONDUIT HOLES IN JUNCTION BOX AT THE TIME OF PRECASTING OR DRILL AT THE TIME OF PLACEMENT WITH NO STRUCTURAL DAMAGE TO BOX. DIAMETER OF ALL DRILLED HOLES THE SAME AS OUTSIDE DIAMETER OF CONDUIT.
- 5. PLACE TOP OF THE JUNCTION BOX WITH SURROUNDING GRADE OR CONCRETE FLATWORK EXCEPT AS DIRECTED WHEN AREA IS SUBJECT TO WHEEL LOAD. IF WHEEL LOAD IS ANTICIPATED. COVER THE JUNCTION BOX WITH A STEEL PLATE OVERLAPPING THE JUNCTION BOX BY A MINIMUM OF 1/2" ON ALL SIDES AND A MINIMUM OF 4" LAYER OF ASPHALT.
- 6. REFER TO STD DWG AT 7 FOR POLYMER CONCRETE JUNCTION BOX.

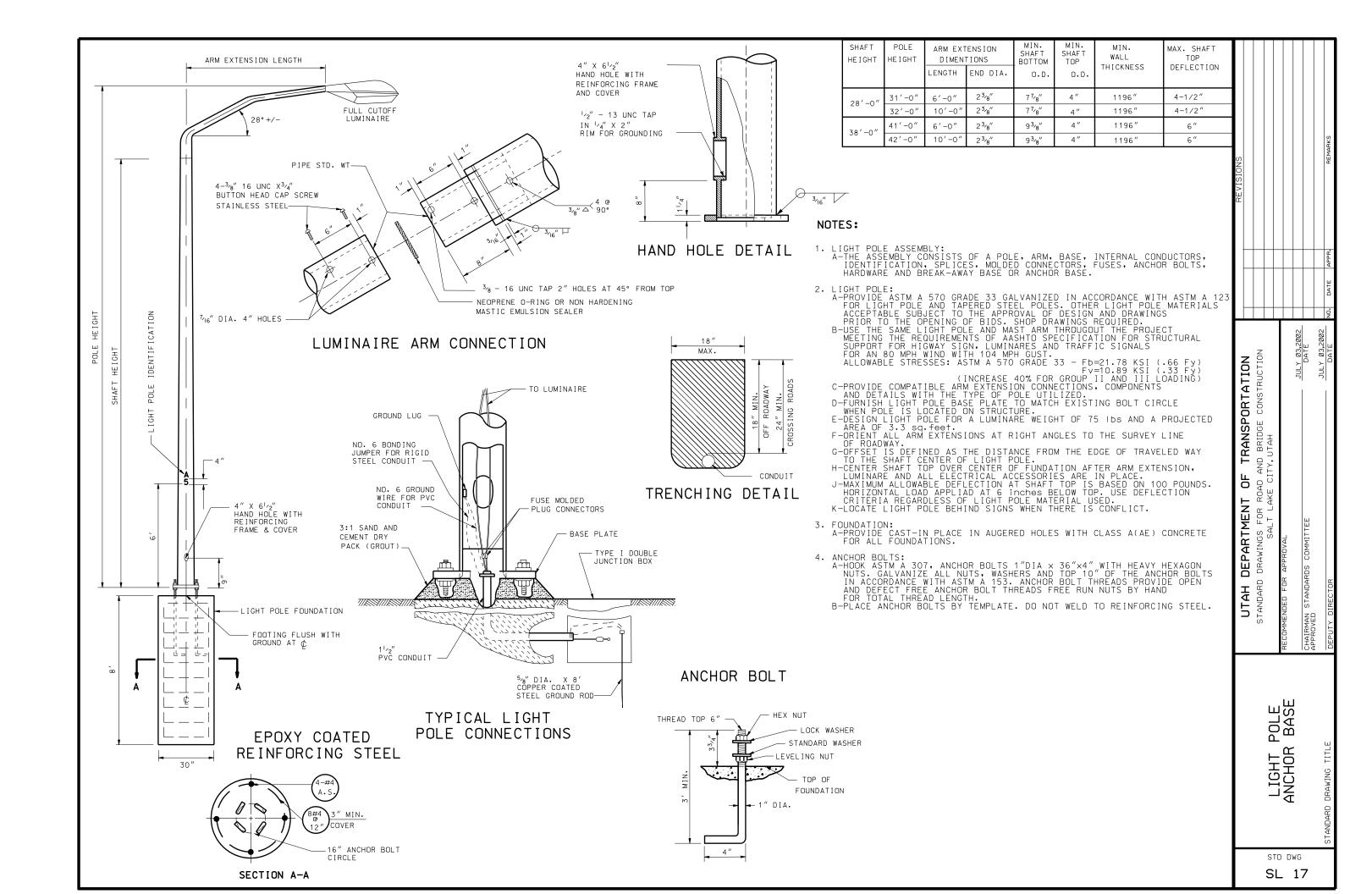
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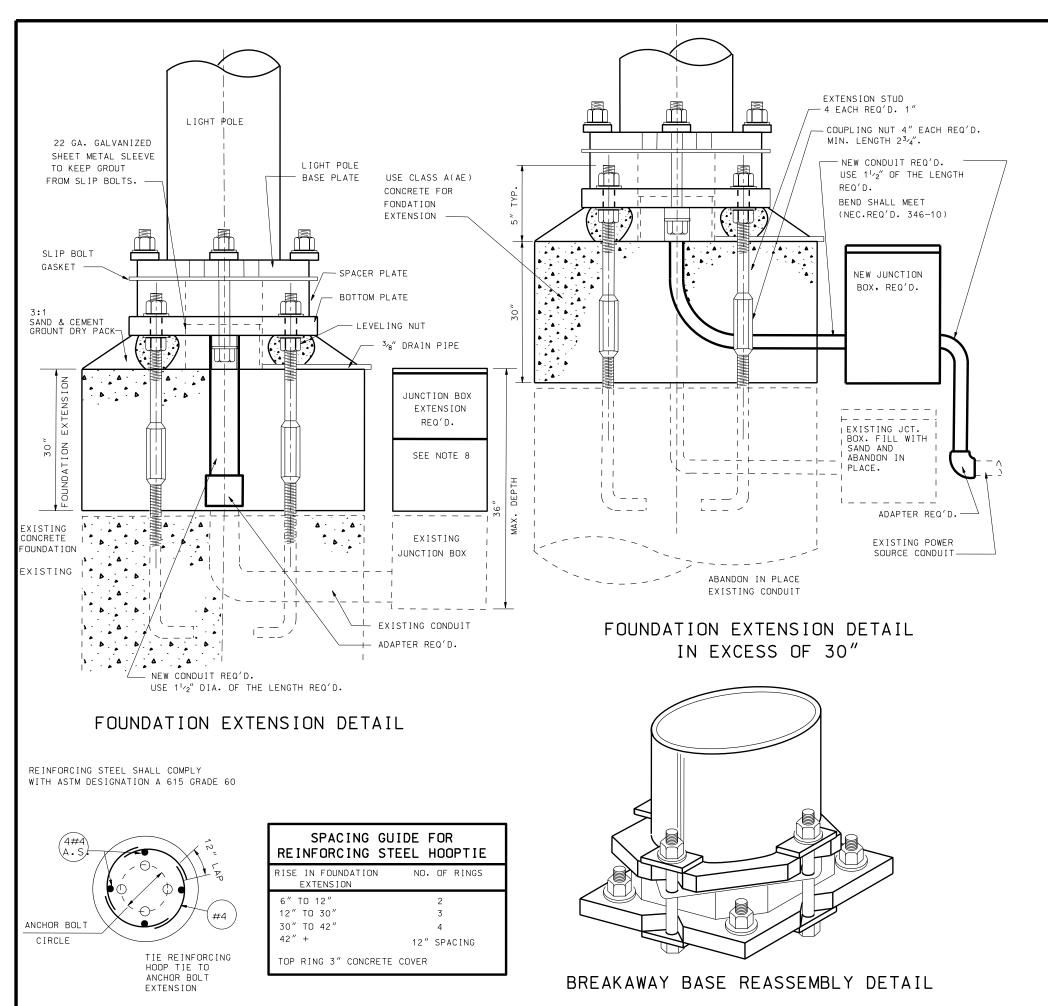












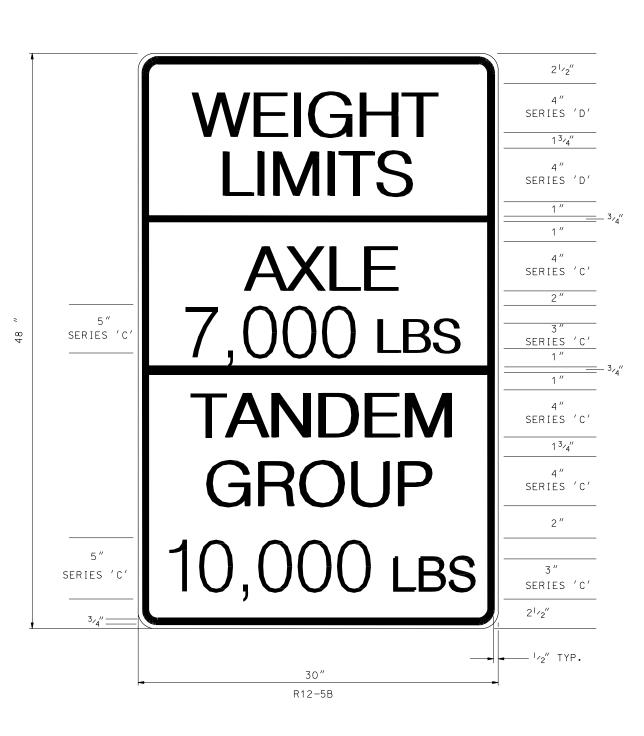
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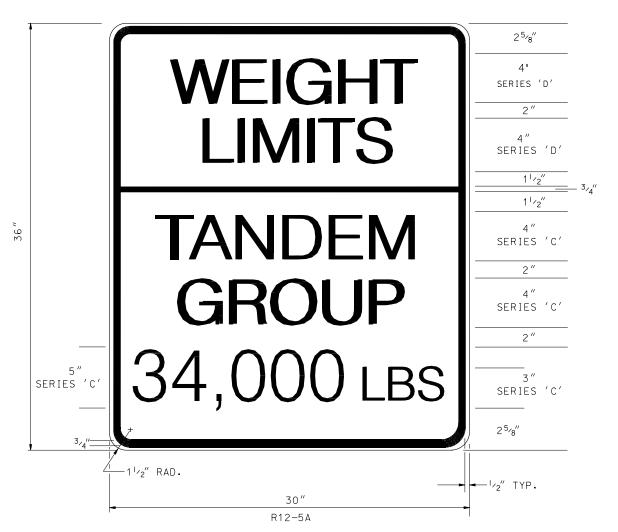
- 1. USE COUPLING NUTS AND EXTENSION STUDS ON EXISTING LIGHT POLE FOUNDATION FOR ANY EXTENSION HEIGHT REQUIRED.
- 2. PROVIDE COUPLING NUTS CONFORMING WITH ASTM A 307 SPECIFICATIONS WITH A MINIMUM LENGTH OF 2³√4INCHES COUPLING NUTS IN ACCORDANCE WITH (ASTM A 123), OR ZINC PLATED (ASTM A 152)
- 3. USE 1 INCH DIA. EXTENSION STUDS CONFORMING TO ASTM A 307. GALVANIZE EXTENSION STUDS CONFORMING TO ASTM A 123 OR ZINC PLATE CONFORMING TO ASTM A 153.
- 4. ATTACH COUPLING NUTS TO EXISTING ANCHOR BOLTS.
 INSTALL EXTENSION STUDS TO PROVIDE 5 INCHES
 PROJECTION ABOVE TOP OF NEW FOOTING. EXTEND
 AND/OR PLACE CONDUIT AS SHOWN. PLACE REINFORCING
 STEEL AS SHOWN. FORM AND CAST FOUNDATION
 EXTENSION WITH CLASS A(AE) CONCRETE.
- 5. REINSTALL BREAKAWAY BASE-PLATE BOTTOM AND SPACER PLATE ON EXTENDED ANCHOR BOLT LEVELING NUTS.
- 6. ERECT AND PLUMB POLE INSTALL SLIP BOLT SHANKS IN CONTACT WITH PLATES. TORQUE SLIP BOLTS TO 80 FT-LBS. RELEASE AND RE-TORQUE TO 66 FT-LBS VERTICALLY OVER CENTER OF BASE.
- 7. GROUT AFTER LIGHT POLE IS SECURED IN FINAL POSITION.
- 8. EXTEND FOUNDATION EXTENSION, TO A MAXIMUM OF 30 INCHES, USE EXISTING CONDUIT AND JUNCTION BOX. EXTEND CONDUIT AS SHOWN, PLACE JUNCTION BOX TO GRADE BY ADDITION OF JUNCTION BOX TO A MAXIMUM JUNCTION BOX DEPTH OF 36 INCHES, BEYOND 36 INCHES INSTALL A NEW JUNCTION BOX AND CONDUIT SYSTEM AS DETAILED.
- 9. ADJUST JUNCTION BOXES NOT LOCATED AT LIGHT POLE TO GRADE BY ADDITION OF JUNCTION BOX EXTENSIONS TO MAXIMUM JUNCTION BOX DEPTH OF 36 INCHES, BEYOND 36 INCHES INSTALL A NEW JUNCTION BOX.
- 10. PROVIDE NEW CONDUIT LENGTH AND CONFIGURATION NECESSARY TO COUPLE THE EXISTING CONDUIT THROUGH THE FOUNDATION EXTENSION.

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	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION			
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	DEPUTY DIRECTOR		<u> </u>	

STD DWG

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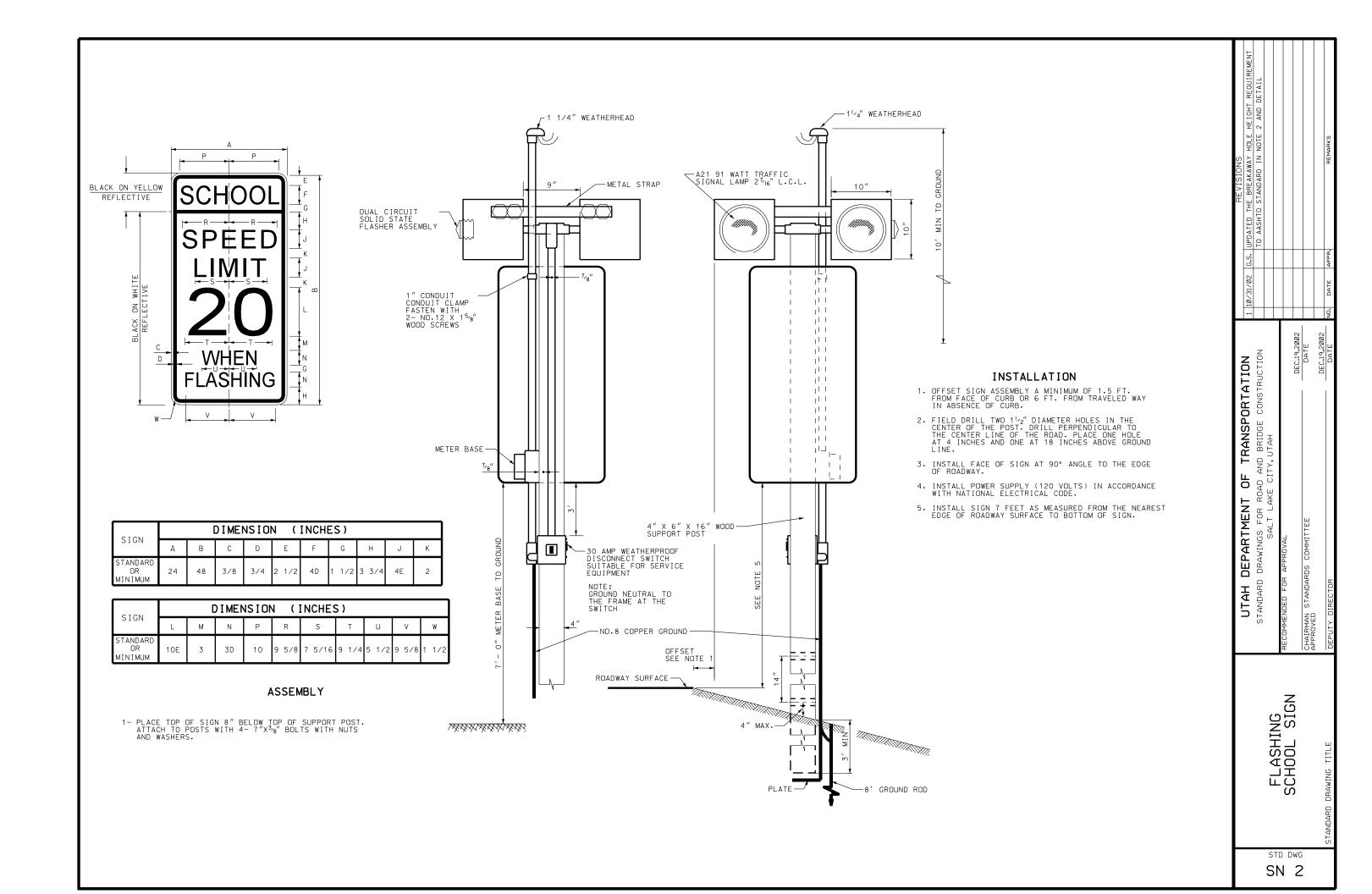


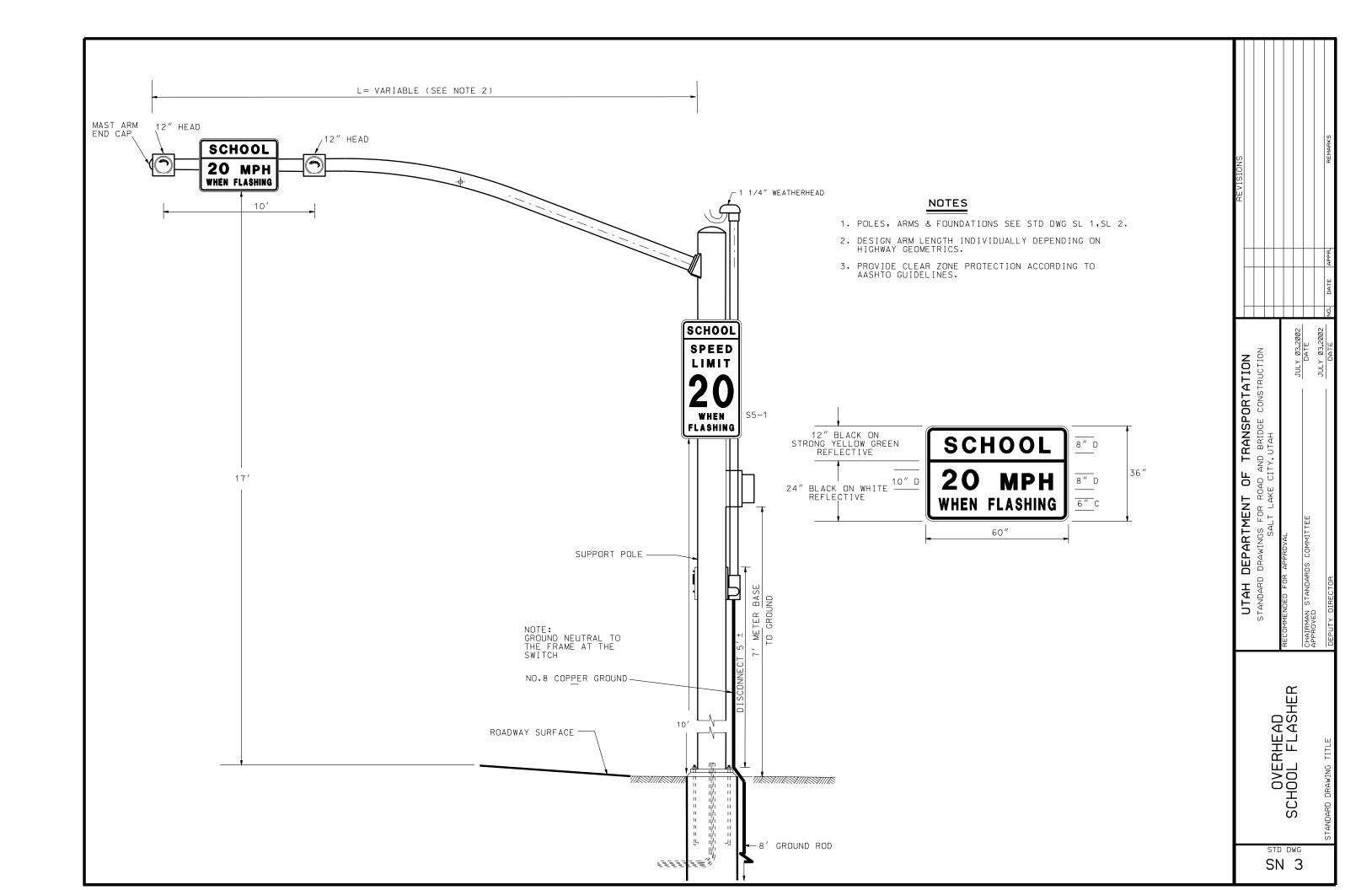
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UTAH DEPARTMENT OF TRANSPORTATION		SALT LAKE CITY, UTAH	RECOMMENDED FOR APPROVAL	JULY 03,2002	CHAIRMAN STANDARDS COMMITTEE	DEPUTY DIRECTOR DATE

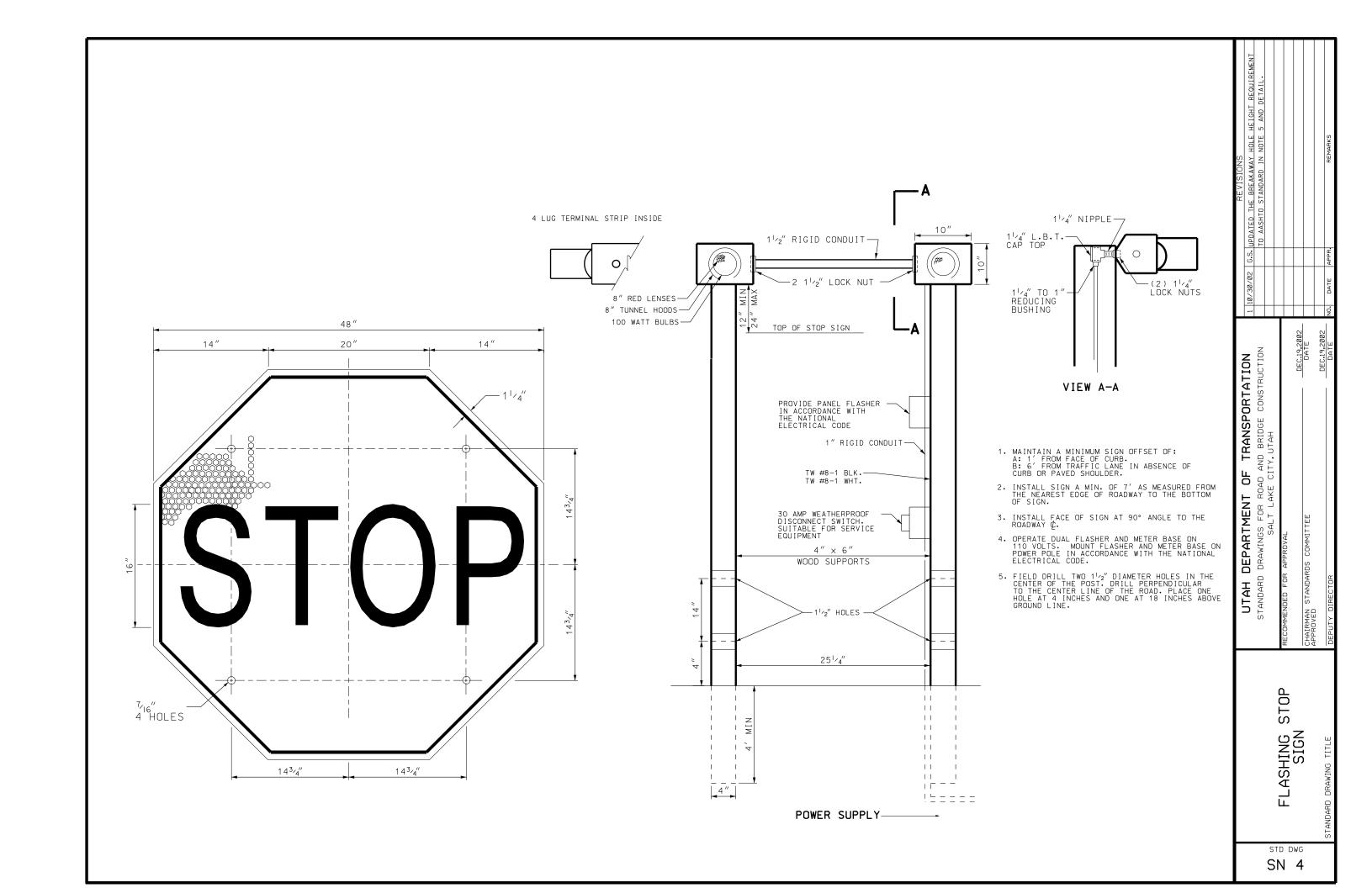
BRIDGE LOAD LIMITS SIGNS

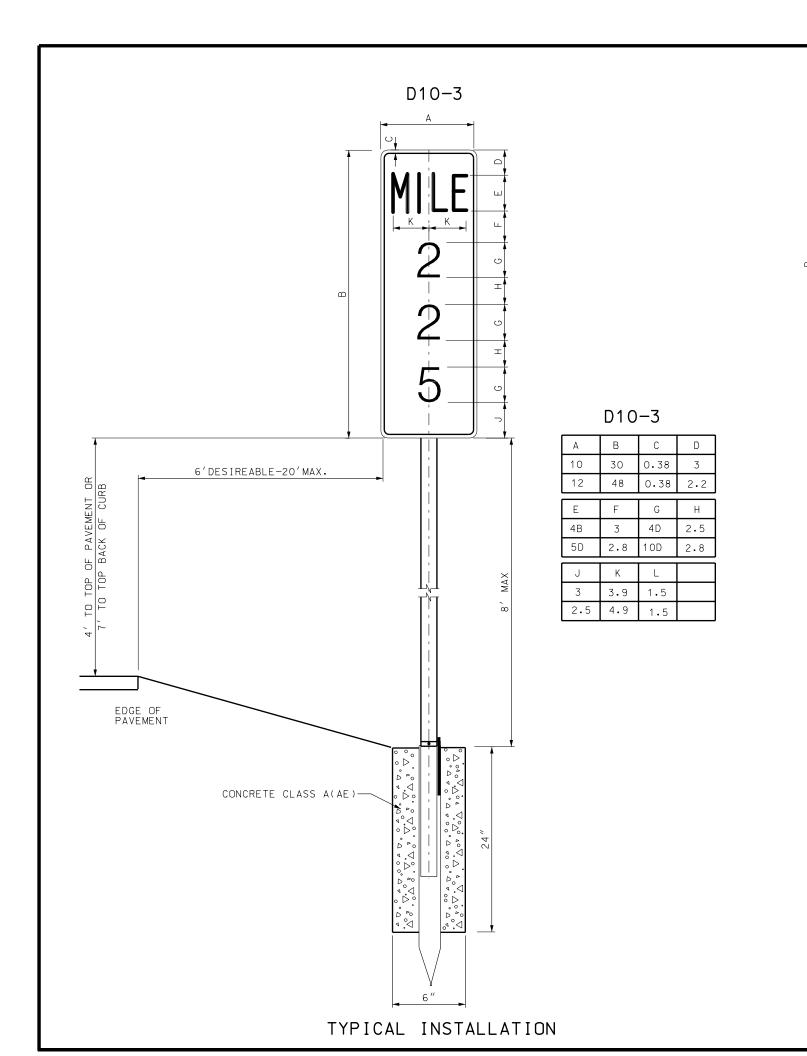
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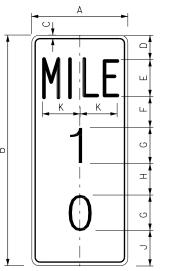




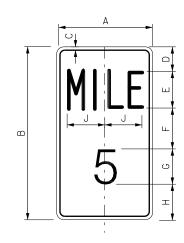




D10-2



D10-1



D10-2

А	В	С	D
10	24	0.38	3
12	36	0.38	3
E	F	G	Н
4B	3	4D	3
5D	2.5	1 O D	2.5
J	K	L	
3	3.9	1.5	
3	4.9	1.5	

D10-1

А	В	C	D
10	18	0.38	2.5
12	24	0.38	3
E	F	G	Н
4B	4	4D	3.5
5D	3	10D	3

J	K
3.9	1.5
4.9	1.5

NOTES:

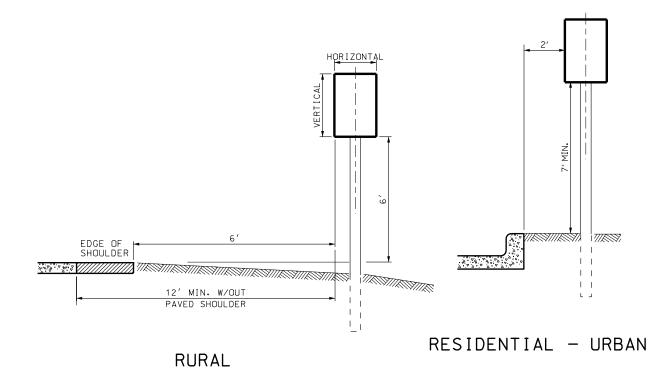
- 1. USE: 12" WIDE FOR INTERSTATE 10" ALL OTHER HIGHWAYS.
- 2. REFLECTORIZED WHITE LEGEND AND BORDER ON A REFLECTORIZED GREEN BACKGROUND.
- 3. DO NOT EXCEED 8' MOUNTING HEIGHT FROM BOTTOM OF SIGN TO THE GROUND WHILE MAINTAINING 4' MINIMUM HEIGHT ABOVE PAVEMENT EDGE.
- 4. USE "TUBULAR STEEL SIGN POST (P2)". FASTEN PANEL WITH 5/16"x 3" S.S. BOLT; LOCK NUT, USE 5/16" NYLON WASHER AGAINST SIGN FACE.

TAH DEPARTMENT OF TRANSPORTATION 1 108/13/02 L.B. REVISED ENTIRE SHEET	DARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	SALT LAKE CITY, UTAH	ECOMMENDED FOR APPROVAL	DEC.19,2002	ANDARDS COMMITTEE	DEC.19,2002	444 Civ 11111111111111111111111111111111111
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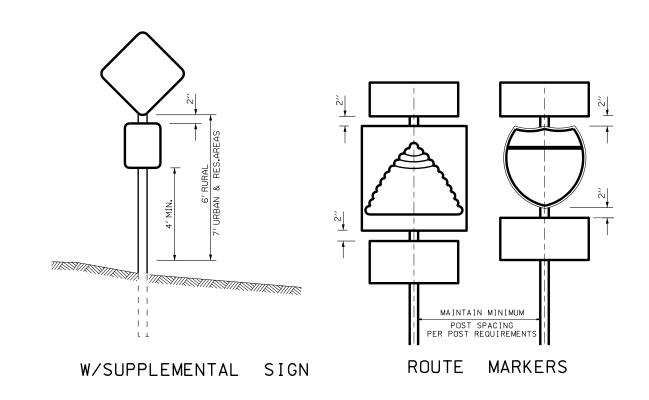
STD DWG

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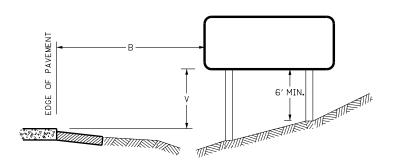
REGULATORY, WARNING, ROUTE MARKERS

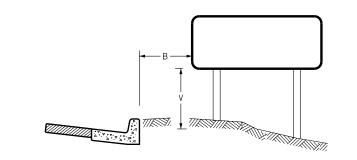


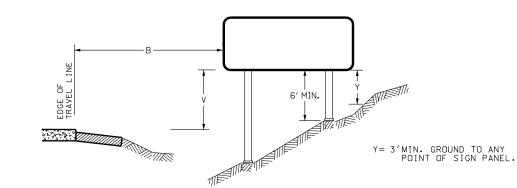
SIGN INSTALLATION



GUIDE & DIRECTIONAL SIGNING







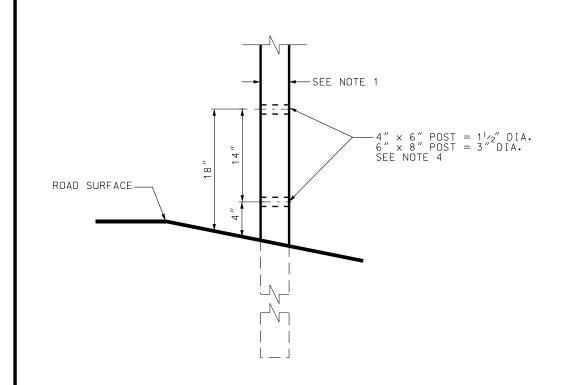
GUIDE & DIRECTIONAL SIGN PLACEMENT

(B) L	ATERAL PL	ACEMENT	(V) VERTICA	AL PLAC	EMENT
CONVENT	ONAL		INTERCTATE	CONVEN	TIONAL
RURAL	URBAN	INTERSTATE	INTERSTATE	RURAL	URBAN
6'- 12'FROM EDGE OF	2'MIN WITH CURB	DESIRABLE — 30'FROM TRAVEL LANE ACCEPTABLE—	DESIRABLE - 7' ACCEPTABLE - 6'		
PAVEMENT OR SHOULDER	2'MIN PLUS SHOULDER	12 MIN FROM EDGE OF SHOULDER	7′	6′	7′
	WITHOUT CURB	2'MIN WHEN BEHIND BARRIER	7′		

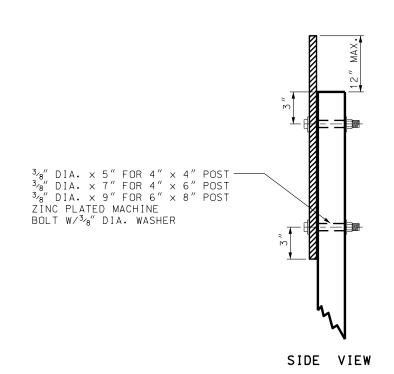
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PLACEMENT OF GROUND MOUNT SIGNS

STD DWG

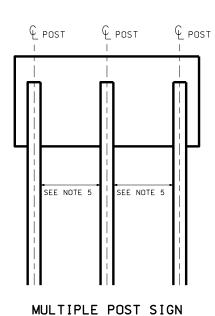


WEAKENED POST
DETAIL
SEE NOTE 3



				TIN	/BER	SIGN	POST	S (No	omina	11)			
				HOR	IZONTAI	L SIGN	DIMENS	SION (inches	;)			
~[12	24	36	48	60	72	84	96	108	120	132	144
nches	12	1 - 4×4 4	1 - 4×4 4	1 - 4×4 4	1 - 4×4 4	2 - 4×4 4							
ino.	18	1 - 4×4 4	1 - 4×4 4	1 - 4×4 4	1- 4×6 4	2 - 4×4 4	2 - 4×4 4	2 - 4×4	2 - 4×6 4				
_[24	1 - 4×4 4	1 - 4×4 4	1- 4×6 4	1- 4×6 4	2 - 4×4 4	2 - 4×6 4						
	30	1 - 4×4	1 - 4×4 4	1- 4×6 4	1- 4×6 4	2 - 4×6 4	2 - 4×6 4	2 - 4×6	2 - 4×6 4	2 - 4×6 4	2 - 4×6 4	3 - 4×6 4	3 - 4×6
IMENS	36	1 - 4×4 4	1- 4×6 4	1- 4×6 4	1- 4×6 4	2 - 4×6 4	2 - 4×6 4	2 - 4×6 4	2 - 4×6 4	3 – 4×6 4	3 - 4×6 4	3 - 4×6 4	3 - 4×6 4
MIQ	42	1 - 4×4 4	1- 4×6 4	1- 4×6 4	1- 4×6 4	2 - 4×6 4	2 - 4×6 4	2 - 4×6 4	3 - 4×6	3 - 4×6 4	3 - 4×6 4	2 - 6×8 5	2 - 6×8 5
z	48	1 - 4×4	1- 4×6 4	1- 4×6 4	2 - 4×6 4	2 - 4×6 4	2 - 4×6 4		3 - 4×6	3 - 4×6 4	2 - 6×8 4	2 - 6×8 5	2 - 6×8 5
SI	54	1 - 4×4 4	1- 4×6 4	1- 6×8 5	2 - 4×6 4	2 - 4×6 4	1- 6×8 5		2 - 6×8 5	2 - 6x8 5	2 - 6×8 5	2 - 6×8 5	2 - 6×8 5
S C	60	1- 4×6 4	1- 4×6 4	1- 6×8 5	2 - 4×6 4	1- 6×8 5	1- 6×8 5		2 - 6×8 5	2 - 6x8 5	2 - 6×8 5	2 - 6×8 5	2 - 6×8 5
RTI	66	1- 4×6 4	1- 4×6 4	1- 6×8 5	2 - 4×6 4	1- 6×8 5			2 - 6×8 5	2 - 6x8 5	2 - 6×8 5	2 - 6×8 5	
뾧	72	1- 4×6 4	1- 6×8 5	1- 6×8 5	1- 6×8 5	1- 6×8 5			2 - 6×8 5	2 - 6x8 5	2 - 6×8 5		

LEGEND 2 - 4x6 - NUMBER & SIZE (inch x inch) OF POSTS - EMBEDMENT DEPTH IN FEET

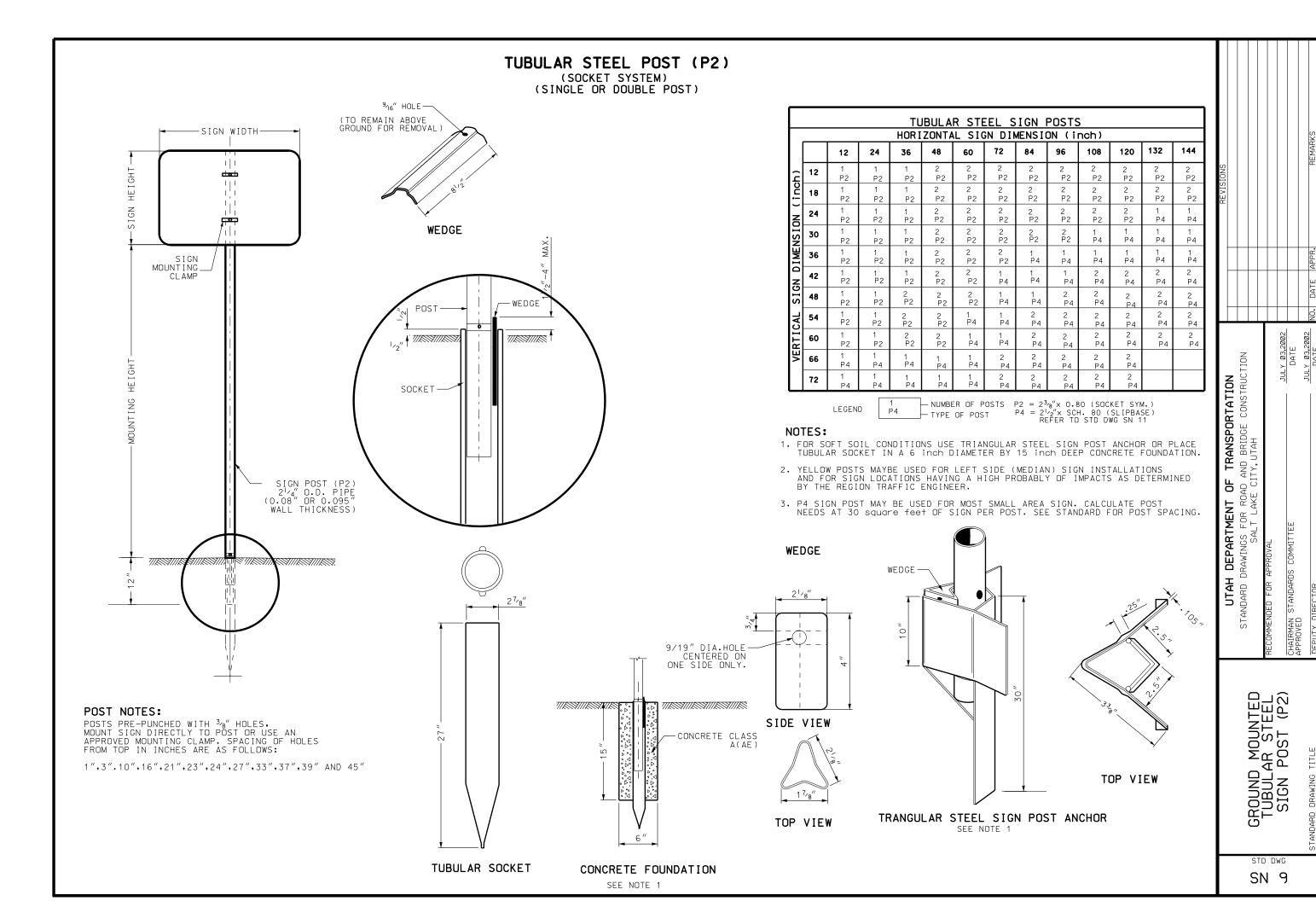


NOTES:

- 1. NARROW POST DIMENSION TO FACE TRAFFIC.
- 2. USE ONE 4"x 6" POST FOR MULTIPLE SIGN INSTALLATION ON SINGLE POST, EXCLUDING ROUTE MARKERS.
- 3. MINIMUM DEPTH OF EMBEDMENT: 4' UNLESS 5' IS SHOWN.
- 4. FIELD DRILL TWO HOLES IN THE CENTER OF THE POST. DRILL PERPENDICULAR TO THE CENTER LINE OF THE ROAD.
- 5. MINIMUM SPACING BETWEEN POST: POST SIZE SPACING FOR 3 OR MORE POSTS 4" × 4" = 4' FOR 3 OR MORE POSTS 4" × 6" = 4' FOR 2 OR MORE POSTS 6" × 8" = 7'

FOR ROAD AND BRIDGE CONSTRUCTION ALT LAKE CITY, UTAH DEC.19,2002 TEE DATE DATE NO DATE DATE DATE			REVISIONS
GROUND MOUNTED TIMBER SIGN POST (P1) RECOMMENDED FOR APPROVAL DEC.19.2002 STANDARD DRAWING TITLE DEC.19.2002 STANDARD DRAWING TITLE DEC.19.2002 STANDARD DRAWING TITLE DEC.19.2002 DEPUTY DIRECTOR DATE DEPUTY DIRECTOR DATE DEPUTY DIRECTOR DATE NO. DATE NO. DATE		LIAH DEFAKIMENI OF IKANSFOKIALION	1 10/31/02 G.S. UPDATED THE BREAKAWAY HOLE HEIGHT REQUIREMENT
CROUND MOUNTEDSALT LAKE CITY, UTAHDEC.19,2002CHAIRMAN STANDARDS COMMITTEEDEC.19,2002DATESTANDARD DRAWING TITLEDEPUTY DIRECTORDEC.19,2002DATEDATE		STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	TO AASHTO STANDARD IN WEAKENED POST DETAIL
TIMBER SIGN POST (P1) TIMBER SIGN POST (P1) THAT IN THE STANDARDS COMMITTEE DEC.19,2002		SALT LAKE CITY, UTAH	
TIMBER SIGN POST (P1) CHAIRMAN STANDARDS COMMITTEE APPROVED STANDARD DRAWING TITLE DEC.19,2002 DEC.19,2002 DEC.19,2002 DEC.19,2002 DEC.19,2002 DEC.19,2002 DEC.19,2002 DEC.19,2002 DEPUTY DIRECTOR			
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DEPUTY DIRECTOR DATE APPR.			
	STANDARD DRAWING TITLE		

SN 8



SIGN INSTALLATION -SIGN POST SIGN POST 7₁₆" DIA. HOLES— ON 1" CENTER (TYPICAL) FASTEN POST TO POST ANCHOR & ANCHOR SLEEVE USING ⁵/16" CORNER BOLT SEE CORNER BOLT DETAIL. -ANCHOR SLEEVE -ANCHOR SLEEVE -SIGN POST ANCHOR NON PERFORATED -SIGN POST ANCHOR NON PERFORATED TYPICAL INSTALLATION . HIGH IMPACT AREAS (TWO PIECE BREAKAWAY ANCHOR) TYPICAL INSTALLATION (W/ONE PIECE BREAKAWAY ANCHOR) 21/2" USE WITH LOCKNUT AND TWO FLAT WASHERS CORNER BOLT DETAIL

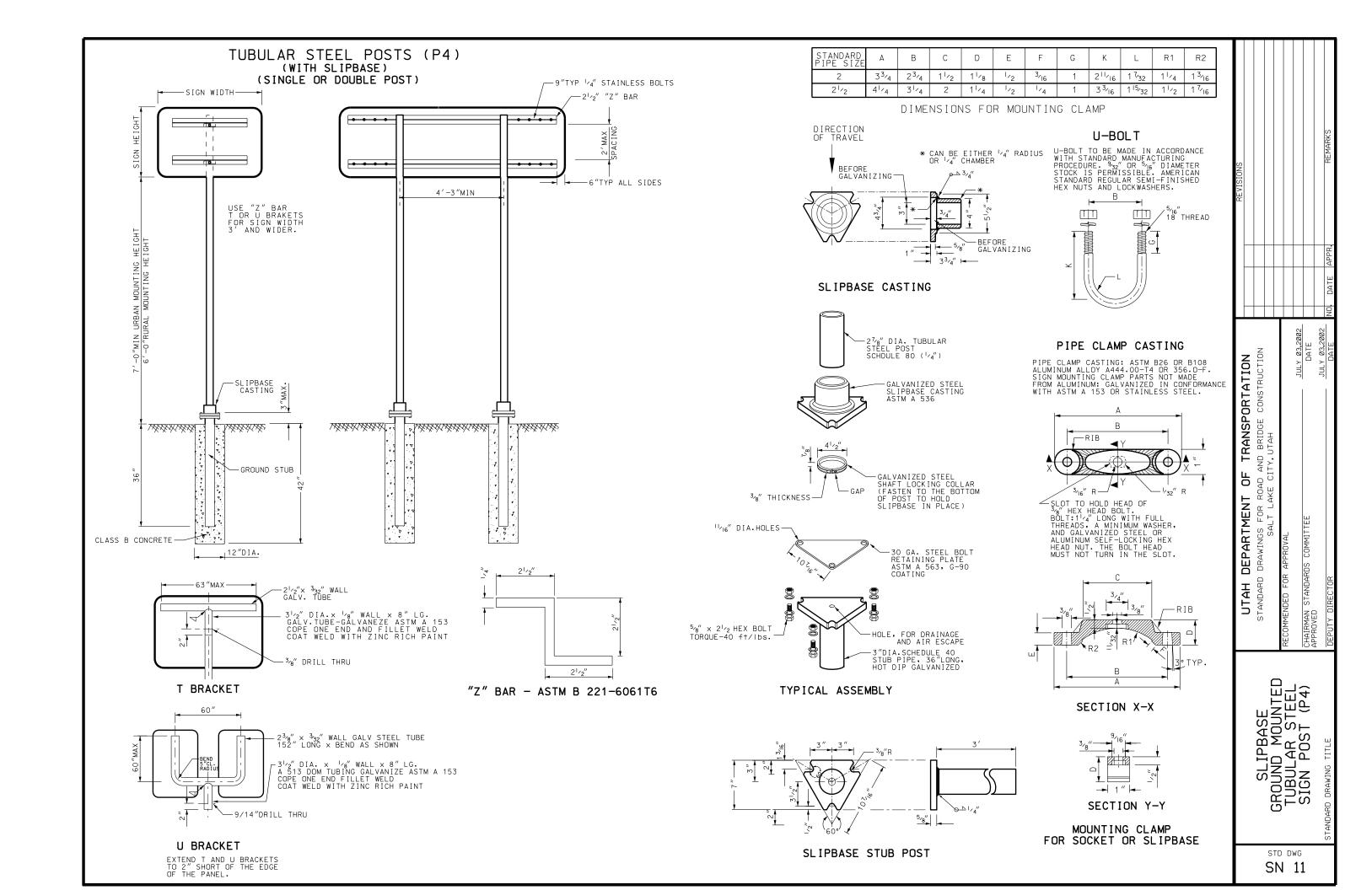
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			Н	ORIZO	NTAL	SIGN I	DIMEN	NO18	inche	es)			
		12	24	36	48	60	72	84	96	108	120	132	144
(<u>g</u>	12	1 T1	1 T1	1 T1	1 T1	2 T1							
inche	18	1 T1	1 T1	1 T1	1 T1	2 T1	2 T2						
ᅱ	24	1 T1	1 T1	1 T1	1 T1	2 T1	2 T1	2 T1	2 T1	2 T2	2 T2	2 T2	2 T2
	30	1 T1	1 T1	1 T2	2 T1	2 T1	2 T1	2 T2	2 T2	2 T2	2 T2	2 T2	
DIMENS	36	1 T1	1 T1	1 T2	2 T1	2 T1	2 T2	2 T2	2 T2	2 T2			
_ I	42	1 T1	1 T2	1 T2	2 T1	2 T2	2 T2	2 T2					
SIGN	48	1 T1	1 T2	2 T1	2 T2	2 T2	2 T2						
الج	54	1 T1	1 T2	2 T2	2 T2	2 T2							
VERTIC	60	1 T1	1 T2	2 T2	2 T2								
	66	1 T1	1 T2	2 T2									
	72	1 T1	1 T2	2 T2									

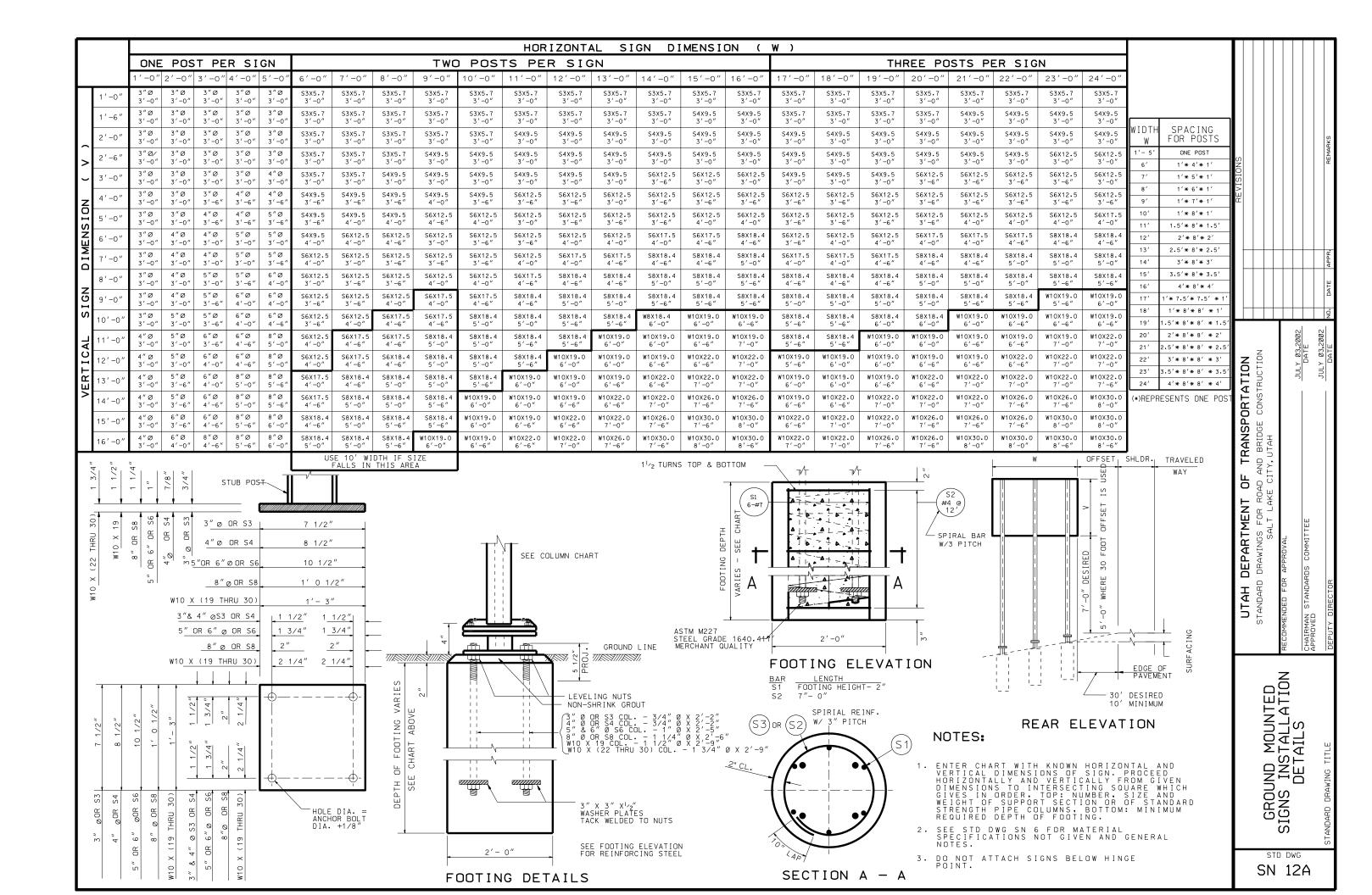
T1 = 2" 12 GAUGE W/2 1 / $_{4}$ " ANCHOR, 2 1 / $_{2}$ " SLEEVE T2 = 2 1 / $_{2}$ " 12 GAUGE W/3/4" ANCHOR, 3" SLEEVE

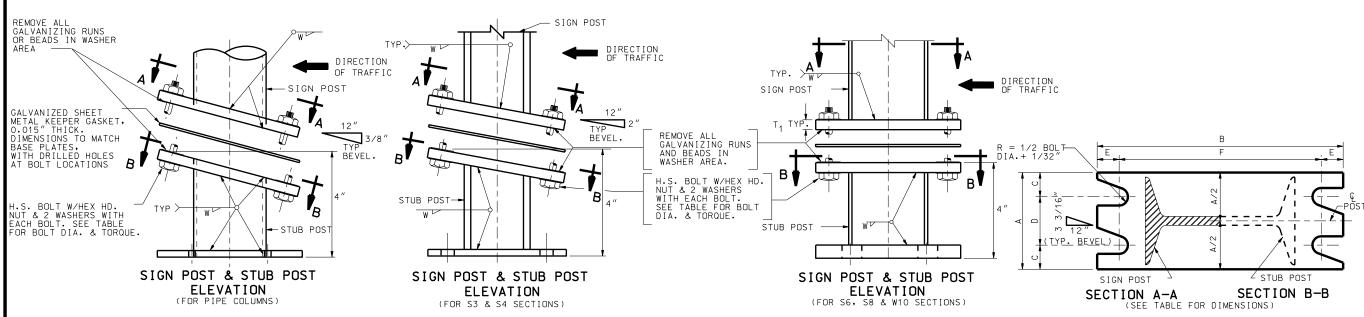
1. FOR SOFT SOIL USE TRIANGULAR STEEL SIGN POST ANCHOR: REFER TO STD DWG SN 12

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	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	NO			
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SQUARE STEEL	RECOMMENDED FOR APPROVAL				
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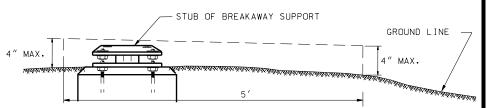






	R	ASE C	ONNECT	ם אחו	ATA 1	ΔRI	F					FUSE	DI V.	TE DA	\ T A T	ΛRI	F		
POST SIZE	BOLT SIZE	A	B			F	F	T,	W	F	G	H	LA	K		I _N	T _a	D ₄	BOLT DIA.
S3 X 5.7	% TORQUE 1/2" DIA.X 2 1/2"	3"	7 1/2"	3/4"	1 1/2"	3/4"	6"	5/8"	3/16"	' 3 7/16"	2 1/4"		2 3/8"	1 1/2"	7/16"	1/2"		9/16"	
S4 X 9.5	10 FTLB. TORQUE	3 1/2"	7 1/2"	3/4"	2"	3/4"	6"	5/8″	1/4"	3 7/16"	2 1/4"	1 1/8"	2 3/4"	1 1/2"	5/8"	1/2"	5/16″	9/16"	1/2"
S6 X 12.5	5 (0 // DIA V 7 //	4 1/2"	10"	1 1/8"	2 1/4"	3/4"	8 1/2"	3/4"	5/16"	4 3/8"	2 1/2"	1 1/4"	3 3/8"	2"	11/16′	5/8"	3/8"	9/16"	1/2"
S6 X 17.5	5/8" DIA. X 3" 24 FTLB. TORQUE	4 1/2"	10"	1 1/8"	2 1/4"	3/4"	8 1/2"	3/4"	5/16"	4 3/8"	2 1/2"	1 1/4"	3 5/8"	2"	13/16′	5/8″	3/8"	11/16"	5/8"
S8 X 18.4		5″	12"	1 1/8"	2 3/4"	3/4"	10 1/2"	3/4"	5/16"	4 3/8"	2 1/2"	1 1/4"	4 "	2 1/4"	7/8"	5/8"	7/16"	13/16"	3/4"
W10 X 19.0	7/4" DIA V 7 4/0"	6"	1'-2 1/2"	1 1/4"	3 1/2"	7/8"	1'-0 3/4"	1 "	5/16"	6"	3 "	1 1/2"	4 "	2 1/4"	7/8"	3/4"	3/8"	15/16"	
W10 X 22.0	3/4" DIA.X 3 1/2" 38 FTLB. TORQUE	7 "	1'-3"	1 1/2"	4 "	7/8"	1'-1 1/4"	1 "	5/16"	6"	3 "	1 1/2"	5 3/4"	3 3/4"	1 "	7/8"	3/8"	15/16"	7/8"
W10 X 26.0		7 "	1 ′ -3 ″	1 1/2"	4 "	7/8"	1'-1 1/4"	1 "	5/16"	6"	3 "	1 1/2"	5 3/4"	3 3/4"	1 "	7/8"	7/16"	15/16"	7/8"
W10 X 30.0	1" DIA.X 3 1/2" 51 FTLB. TORQUE	7″	1'-3"	1 1/2"	4 "	7/8″	1′ 1 1/4″	1 1/8″	5/16"	6"	3"	1 1/2"	5 3/4"	3 3/4"	1 "	7/8″	1/2"	15/16"	7/8″
3" DIA. STD. PIPE	1/2" DIA.X 2 1/2"	4 1/2"	7 1/2"	1 "	2 1/2"	3/4"	6"	3/4"	1/4"										
4" DIA. STD. PIPE	10 FTLB. TORQUE	5 1/2"	8 1/2"	1 "	3 1/2"	3/4"	7″	3/4"	1/4"										
5" DIA. STD. PIPE	5 /0 // DIL V 7 4 /0 //	6 1/2"	10 1/4"	1 1/4"	4 "	7/8"	8 1/2"	1 "	1/4"		NO	FUSE	PLATE	REQUI	IRED C	DN PI	PE CC	DLUMN	
6" DIA. STD. PIPE	5/8" DIA.X 3 1/2" 24 FTLB. TORQUE	7 1/2"	11 1/2"	1 1/4"	5″	7/8"	9 3/4"	1 "	5/16"										
8" DIA. STD. PIPE		9 1/2"	1 ′ -2 ″	1 1/4"	7"	7/8"	1'-0 1/4"	1 "	5/16"										

SECTIONS SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE HAND FROM THAT SHOWN FOR INSTALLATION ON LEFT SHOULDER "S" POST IS SHOWN, PIPE POST SELECTIONS ARE SIMILAR. SELECTIONS ARE SIMILAR.

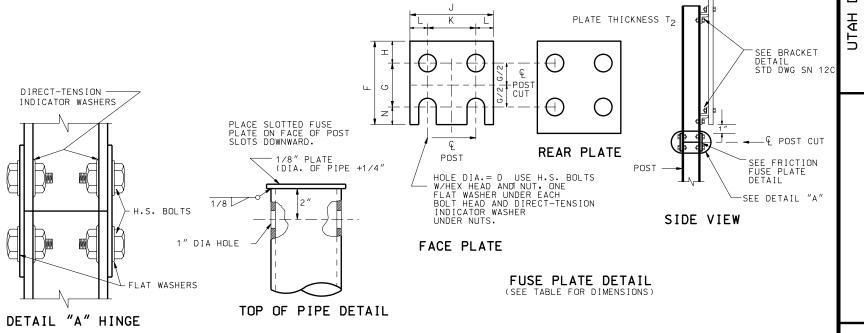


PLACE SIGN SUPPORT FOUNDATION SO IMPACTING VEHICLES DO NOT SNAG ON EITHER FOUNDATION OR ANY SUBSTANTIAL REMAINS OF SIGN SUPPORT. GRADE SURROUNDING TERRAIN TO PERMIT IMPACTING VEHICLES TO PASS OVER FOUNDATION AND PORTIONS OF SIGN SUPPORTS WHICH REMAIN IN THE GROUND OR ARE RIGIDLY ATTACHED TO THE FOUNDATION.

BREAKAWAY SUPPORT STUB HEIGHT MEASUREMENT

NOTES:

- 1. CONFORM TO THE LATEST EDITION OF AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
- 2. FABRICATE BASE, SLIP AND FUSE PLATES FROM STEEL MEETING THE REQUIREMENTS SPECIFIED FOR THE SIGN POST TO WHICH THEY ARE ATTACHED EXCEPT WHERE PIPE POST ARE USED. IN WHICH CASE CONFORM TO THE REQUIREMENTS OF ASTM A 36.
- 3. USE STRUCTURAL STEEL THAT IS STRUCTURAL CARBON STEEL CONFORMING TO THE FOLLOWING ASTM DESIGNATIONS: STANDARD PIPE 3"-8" DIA. ASTM A 53 GRADE B. W AND S SHAPES ASTM A 36.
- 4. USE BOLTS, NUTS AND WASHERS CONFORMING TO ASTM A 325 AND CADMIUM ELECTRO PLATING CONFORMING TO ASTM A 165 NS.
- 5. WELD TO THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATION FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES.
- SAW CUTTING ALL PLATE CUTS IS PREFERRED. FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLATE FACE WILL NOT BE TOLERATED.
- 7. GALVANIZE ALL STRUCTURAL STEEL AFTER FABRICATION IN CONFORMANCE TO AASHTO M 111 (ASTM A 123).
- 8. TIGHTEN HIGH STRENGTH BOLTS IN THE BASE CONNECTION ONLY TO THE TORQUE LIMITS SHOWN IN THE TABLE. DO NOT OVER TIGHTEN.
- 9. TIGHTEN ALL HIGH STRENGTH FRICTION FUSE BOLTS IN THE SHOP. USE DIRECT- TENSION INDICATOR WASHERS TO TIGHTEN THE BOLTS. SEE STANDARD SPECIFICATION SECTION 05120 ARTICLE 3.2 PARAGRAPH C.
- 10. MOUNT ALL SIGNS DESIGNATED FOR MOUNTING WITH BREAKAWAY BASES ON UNDIVIDED HIGHWAYS OR ON DIVIDED HIGHWAYS OF LESS THAN FOUR LANES WITH BREAKAWAYS PLATES PARALLEL TO THE BASE PLATES.



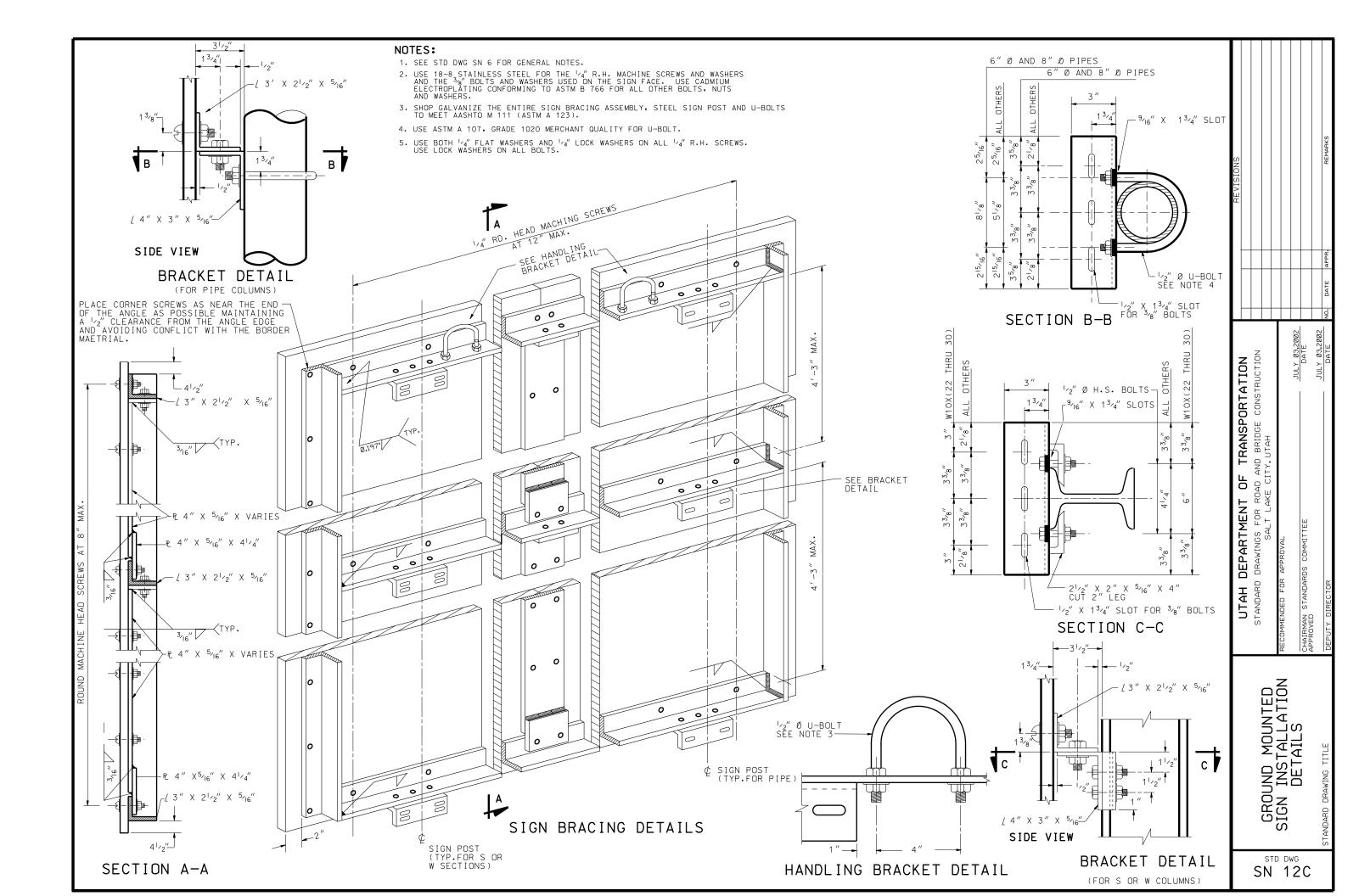
TRANSPORTATION
AND BRIDGE CONSTRUCTION DNA 7 Ы DEPARTMENT SIGN AILS

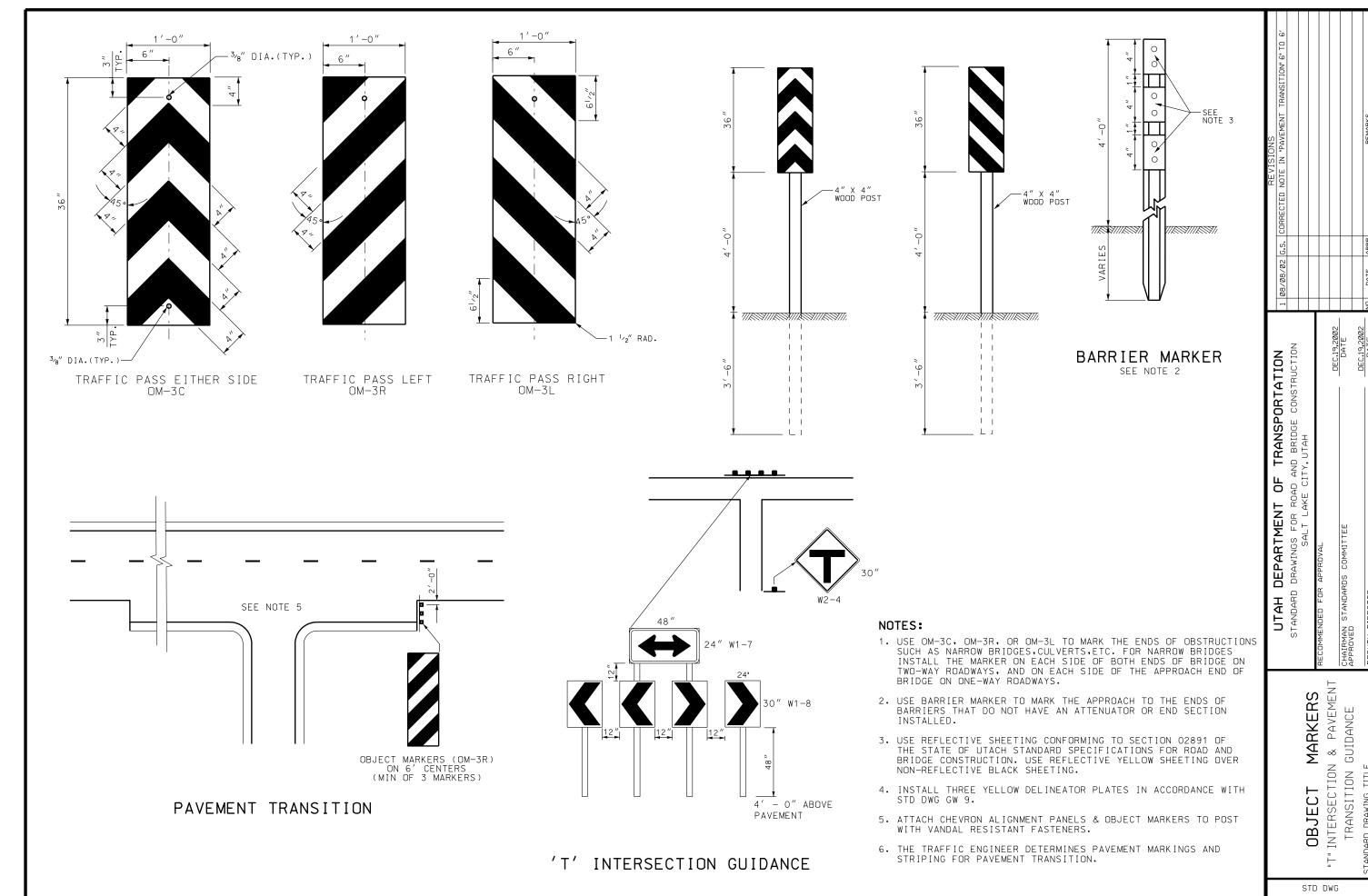
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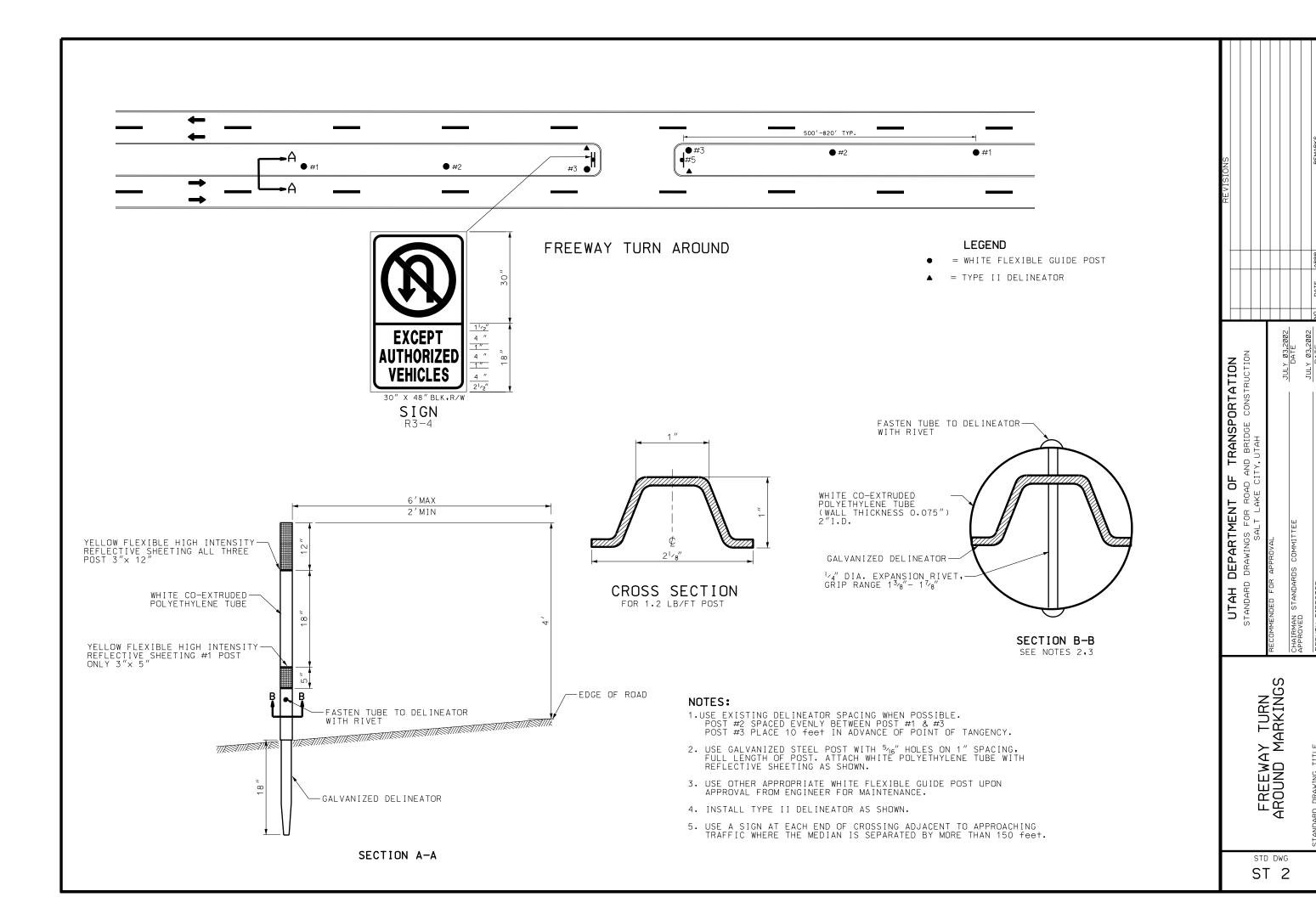
GROUND INSTALL

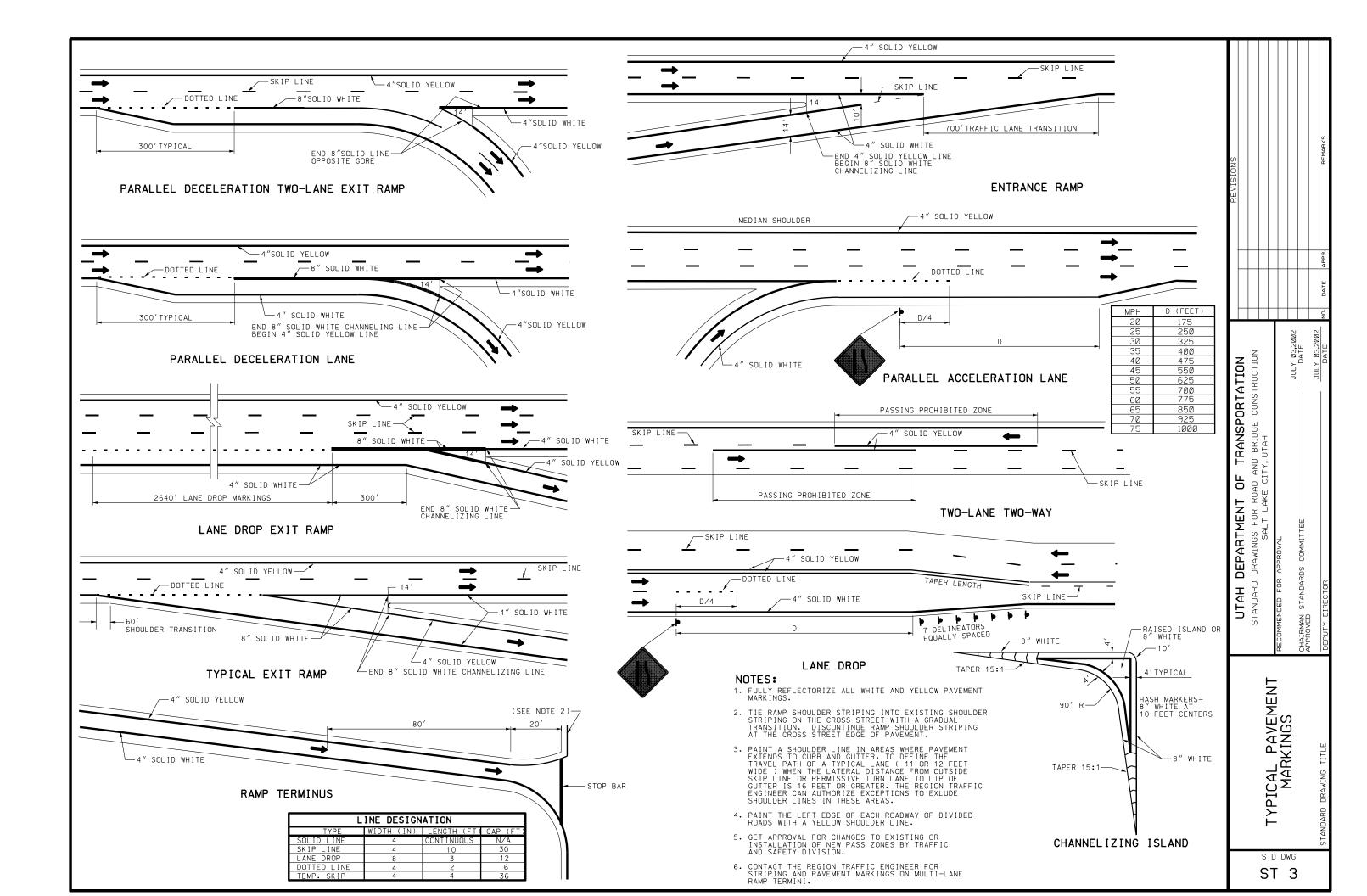
STD DWG SN 12B

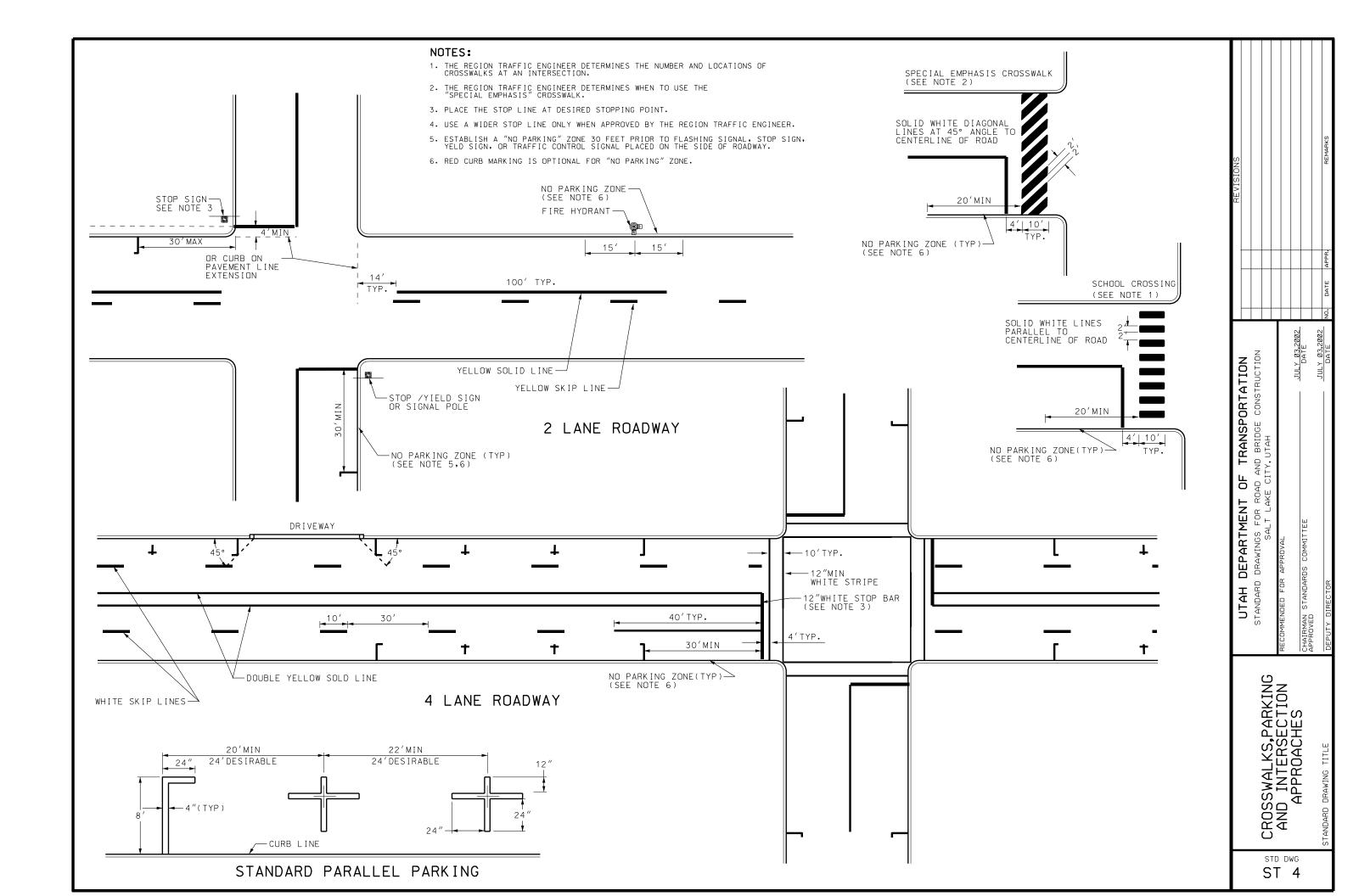


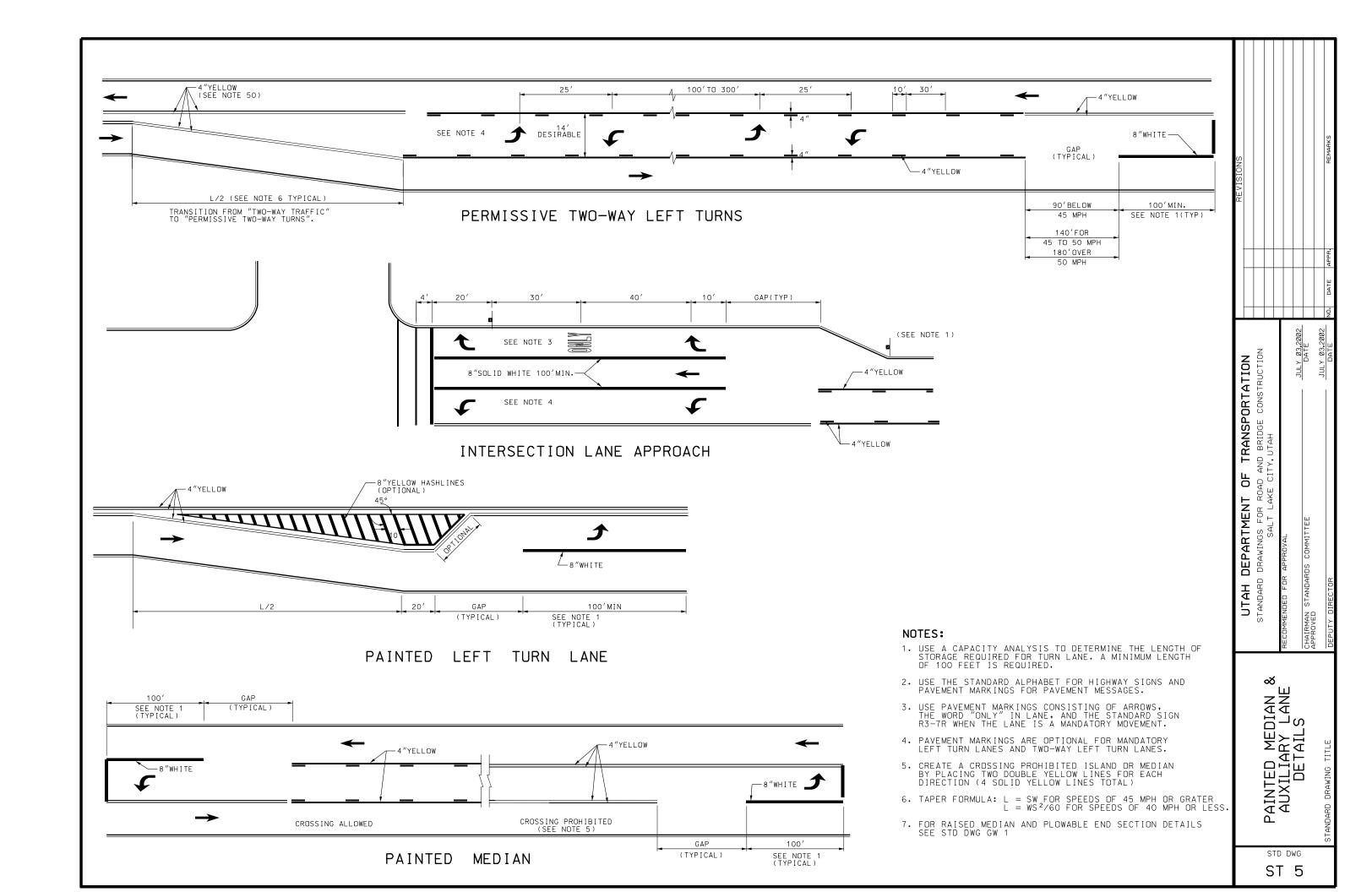


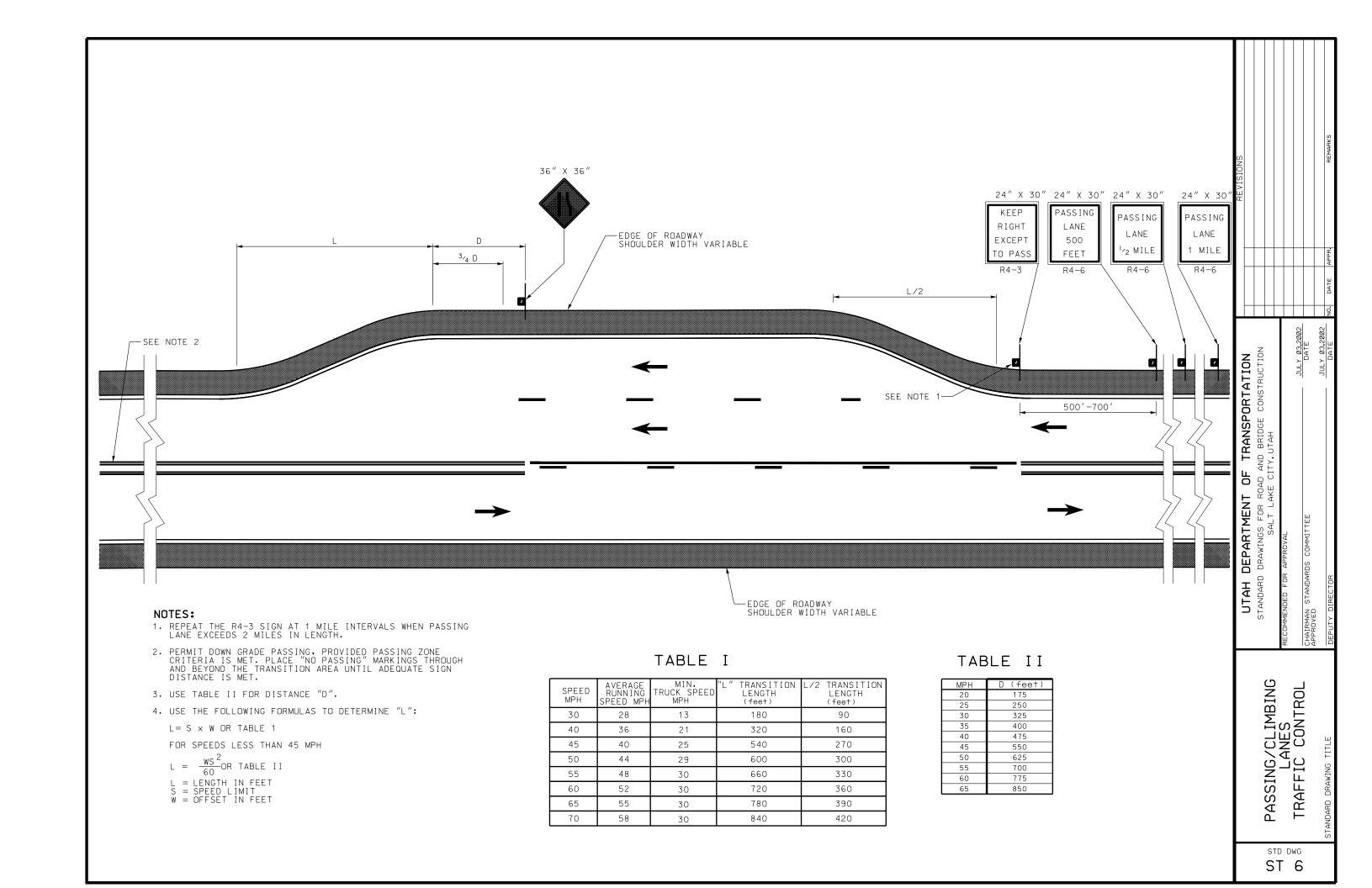
ST 1

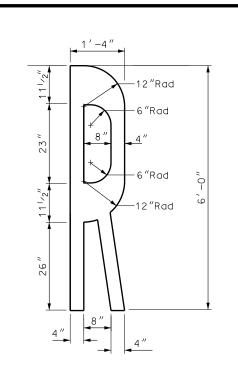






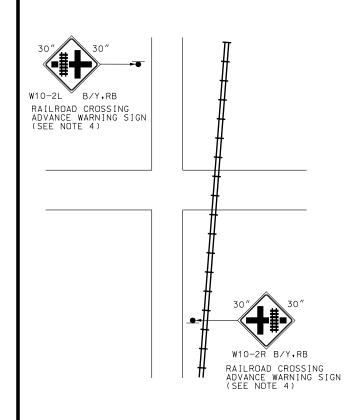


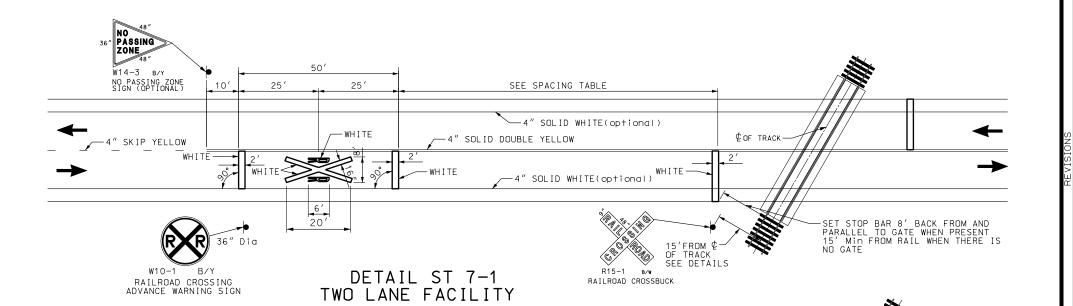


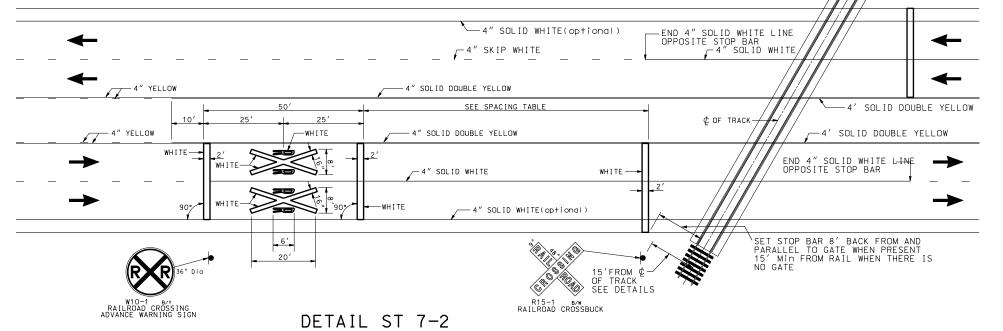


SPACING TABLE

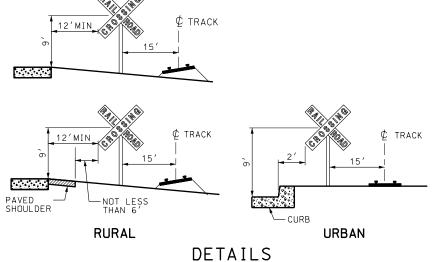
SPEED LIMIT MPH	MIN.DISTANCE (feet)
65 - 70	750
55 - 60	550
45 - 50	375
35 - 40	225
25 - 30	100







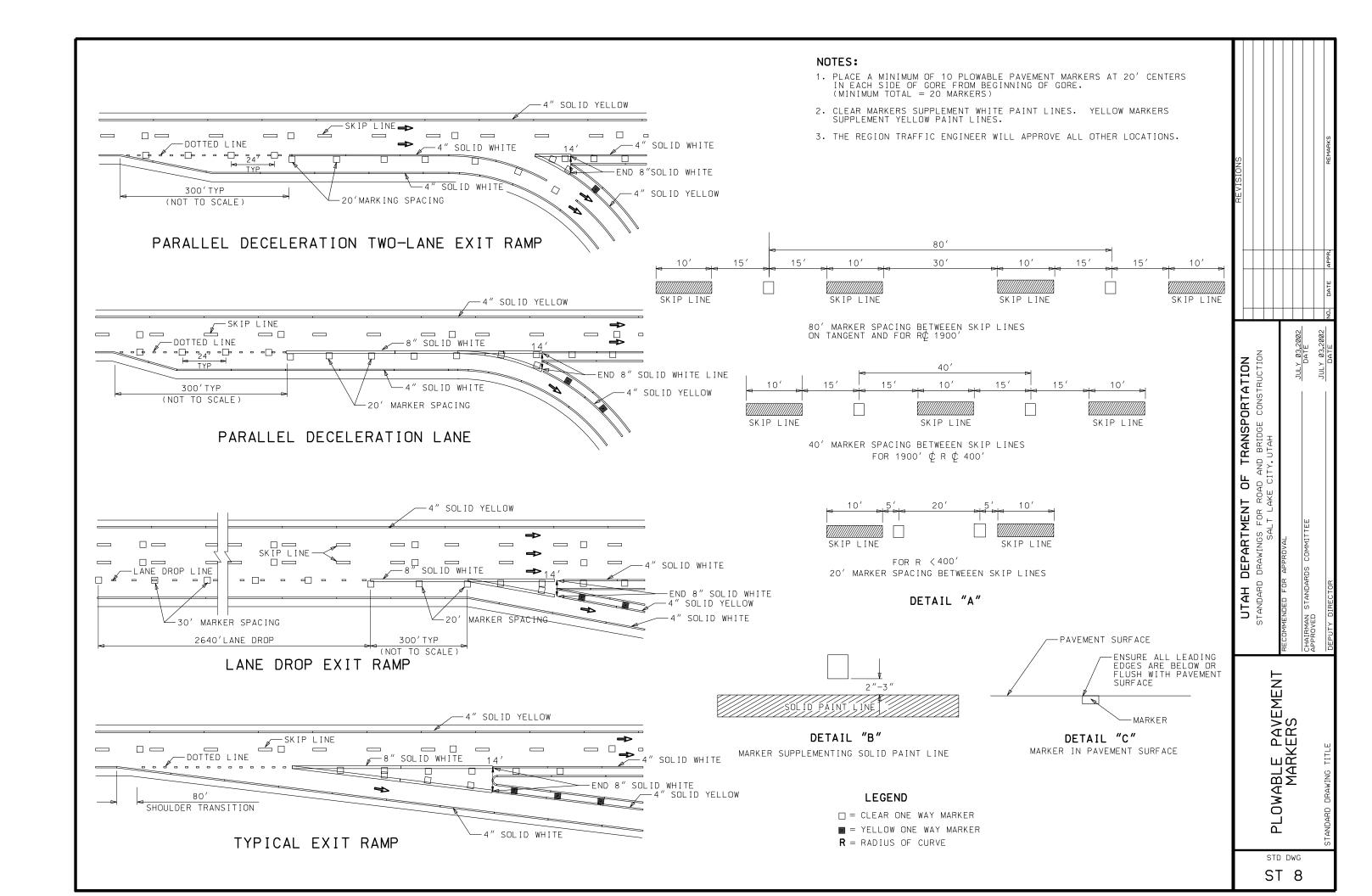
MULTI LANE FACILITY

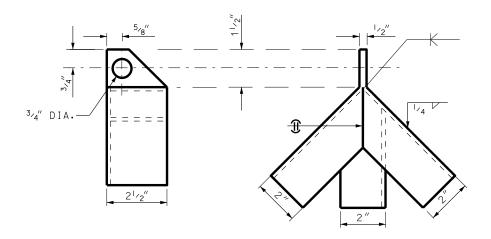


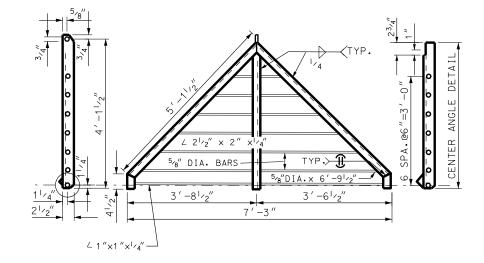
NOTES:

- 1. PLACE PAVEMENT MARKINGS, CONSISTING OF AN "RXR", TRANSVERSE LINES, AND NO-PASSING MARKINGS. USE MARKINGS IN EACH APPROACH LANE ON ALL PAVED APPROACHES TO GRADE CROSSING WHERE GRADE CROSSING SIGNALS OR AUTOMATIC GATES ARE PRESENT AND AT ALL OTHER GRADE CROSSINGS WHERE THE SPEED IS 40 MPH OR GREATER. PLACE PAVEMENT MARKINGS AT OTHER CROSSINGS AS DIRECTED BY THE REGION TRAFFIC ENGINEER.
- 2. EXTEND TRANSVERSE LINES ACROSS ALL APPROACH LANES ON MULTI-LANE ROADS. USE INDIVIDUAL "RXR" MARKINGS IN EACH APPROACH LANE.
- 3. USE AN ADDITIONAL W10-1 ON CROSS STREET WHEN AN INTERSECTION IS LOCATED BETWEEN THE W10-1 AND THE GRADE CROSSING.
- 4. USE W10-2 SIGN WHERE THERE IS NOT A W10-1 SIGN BETWEEN THE INTERSECTION AND GRADE CROSSING.
- 5. USE STANDARD ALPHABET FOR HIGHWAY SIGN AND PAVEMENT MARKINGS FOR DIMENSIONS OF RAILROAD PAVEMENT MARKINGS.

REMARKS	NO. DATE APPR.	1	actorate Xt.and	STANDARD DRAWING TITLE	
		DFC.19.2002			
		DATE	CHAIRMAN STANDARDS COMMITTEE		,
		DEC.19,2002		RAII ROAD CROSSING	иG 7
			RECOMMENDED FOR APPROVAL		D'
					T [
			SALT LAKE CITY, UTAH	PAVEMENT MARKINGS	S
		UCTION	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION		
08/13/02 B.A. CORRECT TYPO IN DETAIL ST 7-1	08/13/02 B.A.	NOT	NOTIBLYOLOUNDE IN INJUIND HOLD		
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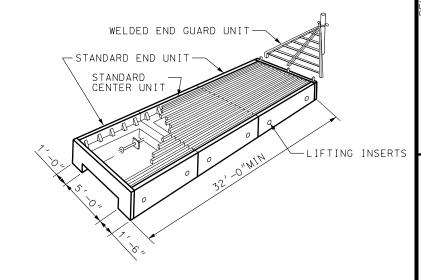






WELDED END GUARD UNIT WT.W/BOLTS, U-CLAMP AND PIPE POST 115 LBS (2 REQUIRED)

5/8" DIA.



NOTES:

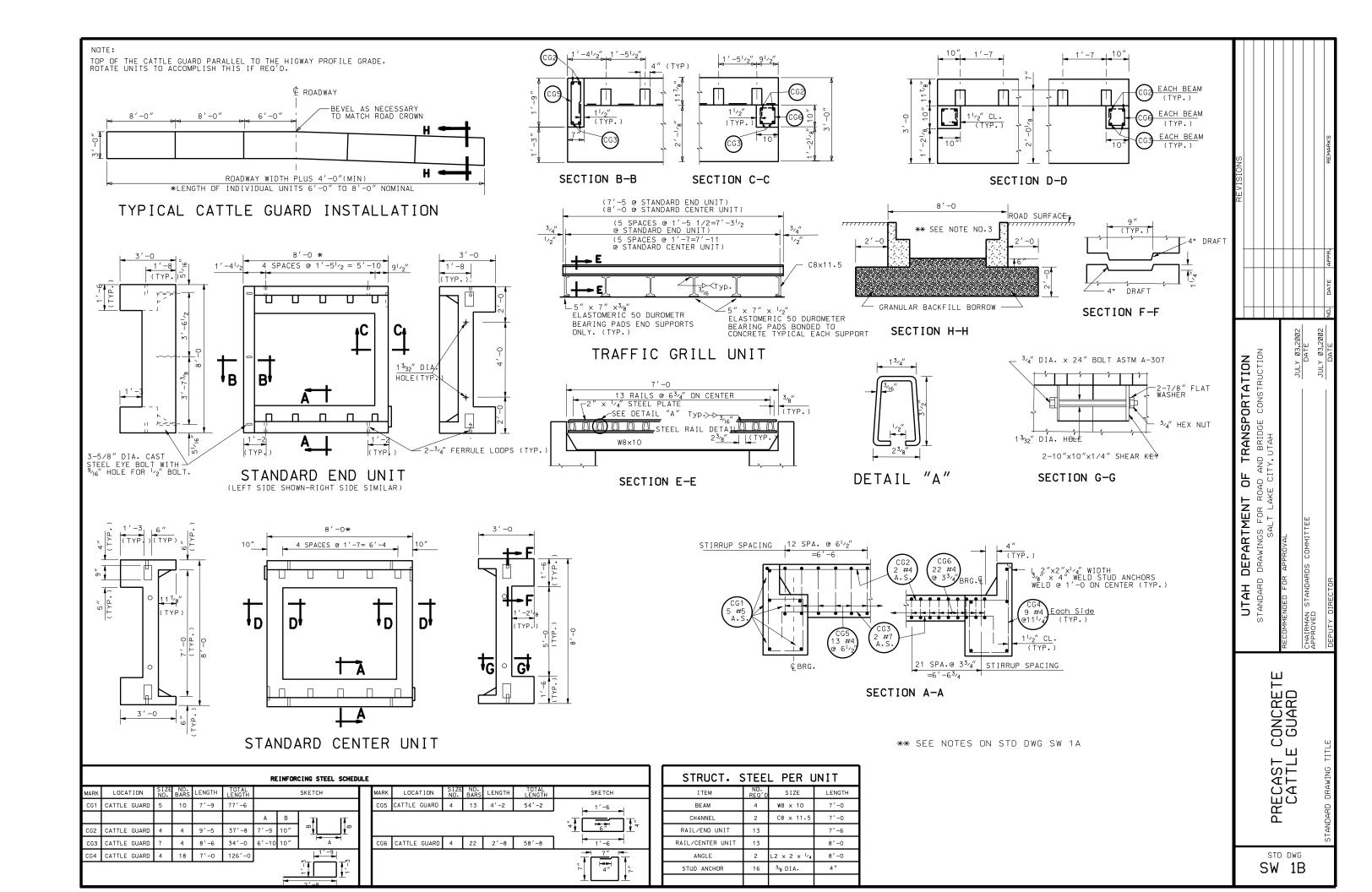
- 1. USE COATED DEFORMED-BILLET REINFORCING STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31 GRADE 60.
- 2. USE STRUCTURAL STEEL CONFORMING TO AASHTO M 270 GRADE 36 AND GALVANIZE AFTER FABRICATION IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123)
- 3. SUB-EXCAVATE SOIL 2'-O" AND BACKFILL WITH GRANULAR BACKFILL BORROW AND COMPACT.
- 4. ANY MODIFICATION REQIRES APPROVAL.
- 5. USE CONCRETE CLASS AA(AE)

DESIGN DATA

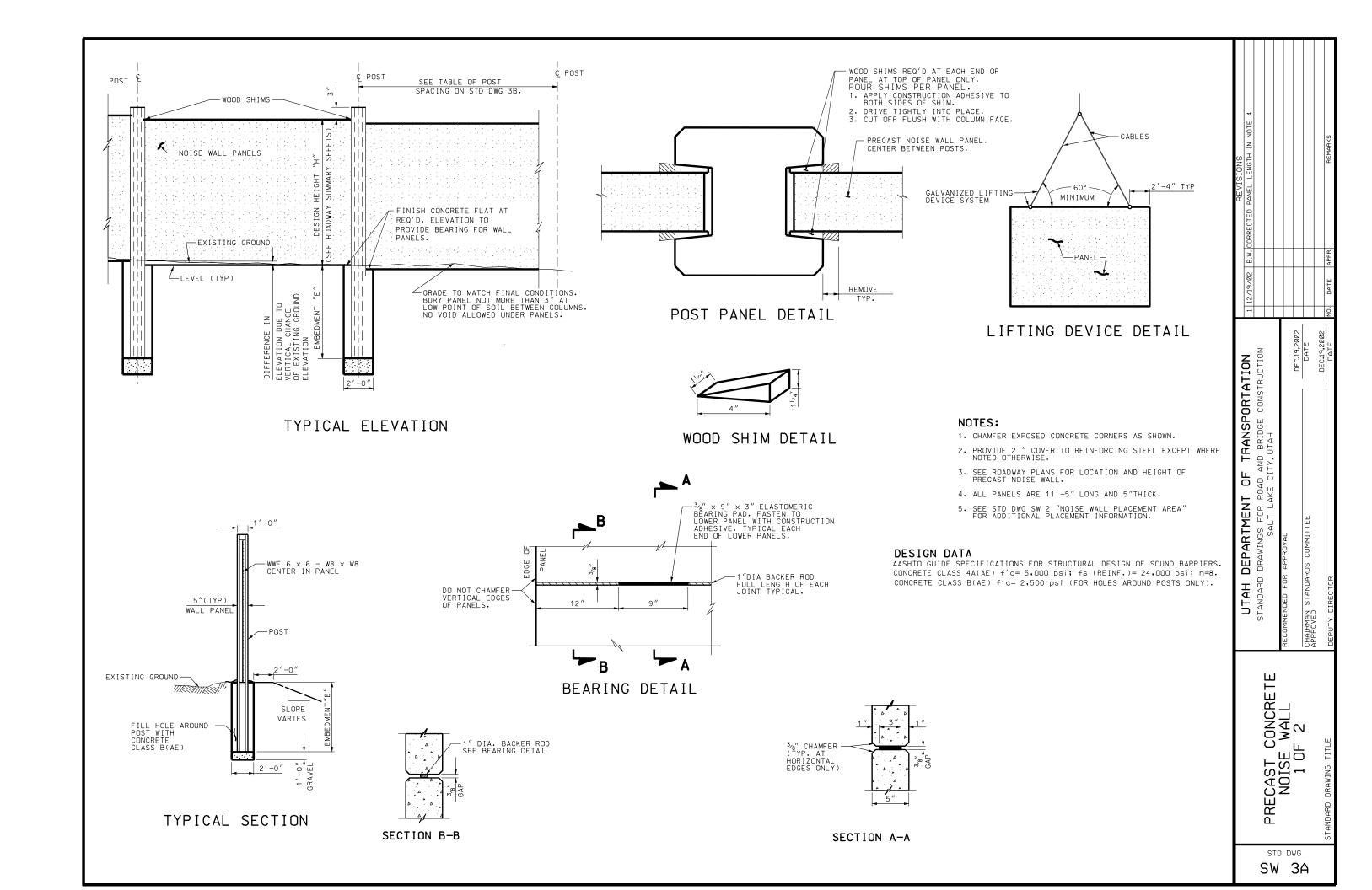
HS-20 LOADING IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATION fc= 1400 psi fs= 2,400 psi (REINFORCING STEEL) fs= 20,000 psi (STRUCTURAL STEEL) n=8

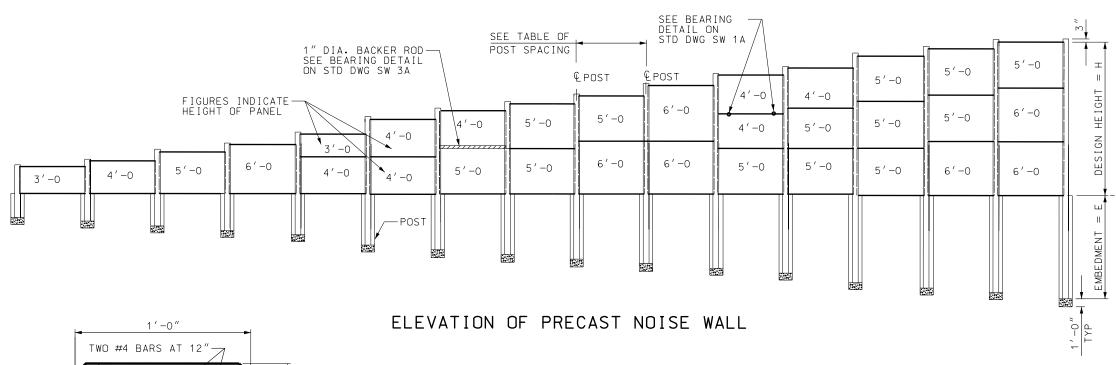
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	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	JCTION			
מיל ב	SALT LAKE CITY, UTAH				
WELDED END					
CIIDBN INIT	RECOMMENDED FOR APPROVAL				
		JULY 03,2002			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		JULY 03,2002			
DRAWING TITLE	DEPUTY DIRECTOR		NO. DATE APPR.	. APPR.	REMARKS

STD DWG



TYPICAL NOISE WALL PLACEMENT LOCATION R/W LINE APPLICATION -SHOULDER LINE TRAFFIC LANE SHOULDER NOISE WALL PLACEMENT AREA -NOISE WALL R/W FENCE--R/W FENCE -SEE NOTE 1 -R/W 1'-0" SEE DETAIL "A" R/W-NOTE: 1. PLACE NOISE WALL A MINIMUM OF 1'-0" INSIDE R/W LINE AND CONNECT R/W FENCE TO BOTH ENDS OF WALL. IF NOT PLACED 1'-0" INSIDE R/W LINE, PLACE NO CLOSER THAN 11'-6" FROM R/W LINE FOR MAINTENANCE PURPOSES OF TRANSPORTATION DAD AND BRIDGE CONSTRUCTION E CITY, UTAH AND ENVIRONMENTAL CONSIDERATIONS. N/A LINE APPLICATION PF DEPARTMENT O D DRAWINGS FOR ROAD SALT LAKE O TRAFFIC LANE EDGE OF PAYEMENT NOISE WALL PLACEMENT AREA UTAH [NOISE WALL ...⊤SEE NOTE 2 - R/W FENCE KR/W FENCE-1'-0" SEE DETAIL "A" -N/A LINE NOISE WALL PLACEMENT AREA FRONTAGE ROAD -EDGE OF PAVEMENT — R/W NOTE : 1. WHEN N/A LINE IS PRESENT, PLACE NOISE WALL A MINIMUM OF 1'-O" INSIDE N/A LINE AND CONNECT R/W FENCE TO BOTH ENDS OF WALL. IF NOT PLACED 1'-O" INSIDE R/W LINE, PLACE NO CLOSER THAN 11'-6" FROM R/W LINE FOR MAINTENANCE PURPOSES AND ENVIRONMENTAL CONSIDERATIONS. -NOISE WALL 1'-0" 2. DO NOT PLACE NOISE WALLS OUTSIDE N/A LINE. -N/A OR R/W LINE STD DWG DETAIL "A" SW 2





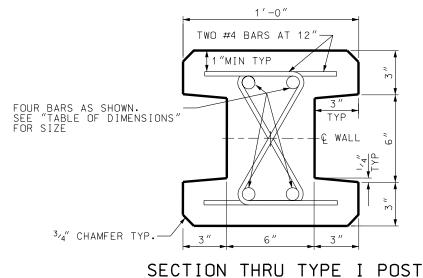
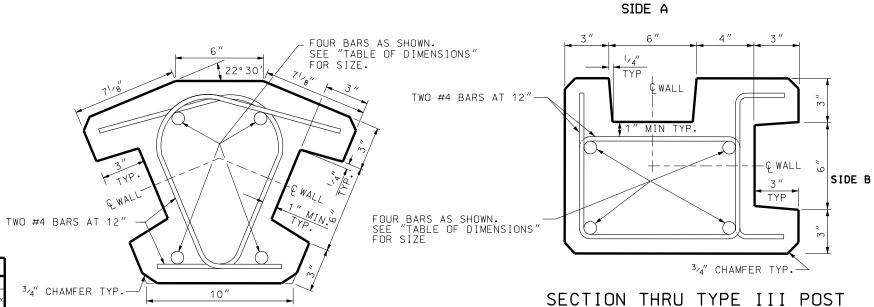


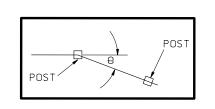
		TABLE OF D	IMENSIONS		
DESIGN H		PANEL HEIG	HT	Р	OST
Н	TOP PANEL	CENTER PANEL	BOTTOM PANEL	VERTICAL BAR SIZE	EMBEDMENT "E
3′	3′			#5	1 ′ -6
4 ′	4 ′			#5	2'-0
5′	5′			#5	2′-6
6′	6′			#5	3′-0
7′	3′		4 ′	#5	3′-6
8′	4 ′		4 ′	#5	4′-0
9′	4 ′		5′	#5	4′-6
10′	5′		5′	#5	5′-0
11′	5′		6′	#6	5′-6
12′	6′		6′	#6	6′-0
13′	4 ′	4 ′	5′	#7	6′-6
14′	4 ′	5′	5′	#7	7′-0
15′	5′	5′	5′	#8	7′-6
16′	5′	5′	6′	#9	8'-0
17′	5′	6′	6′	#9	8′-6

 $\Theta = 0^{\circ} TO 10^{\circ}$



SECTION THRU TYPE II POST FOR 0 = 35° TO 55°

			F	<u> 20</u> 9	T SP	ACINO	3		
		€ POS	ST	ΤO	€ POS	ST			REQ'D SPACING
TYPE	I								12'-0
TYPE	I			TO	TYPE	ΙI			12'-2
TYPE	I			TO	TYPE	III	SIDE	Α	12'-0
TYPE	I			TO	TYPE	ΙΙΙ	SIDE	В	12'-4
TYPE	ΙI			TO	TYPE	ΙI			12'-4
TYPE	ΙI			TO	TYPE	ΙΙΙ	SIDE	Α	12'-4
TYPE	ΙI			ΤO	TYPE	HII	SIDE	В	12′-6
TYPE	ΙΙΙ	SIDE	Α	TO	TYPE	III	SIDE	Α	12'-0
TYPE	ΙΙΙ	SIDE	Α	TO	TYPE	ΙΙΙ	SIDE	В	12′-4
TYPE	ΙΙΙ	SIDE	В	ΤO	TYPE	ΙΙΙ	SIDE	В	12'-8

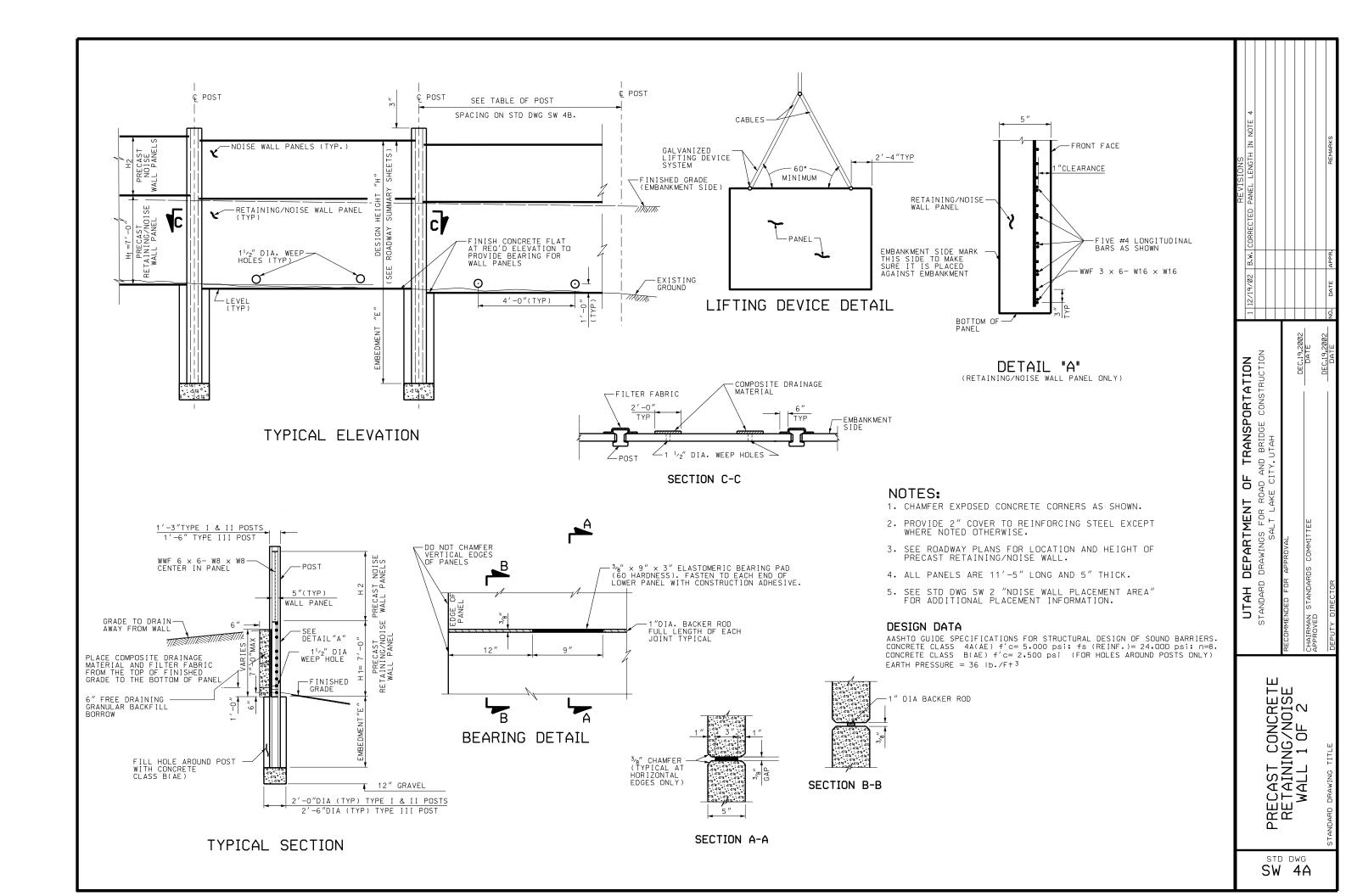


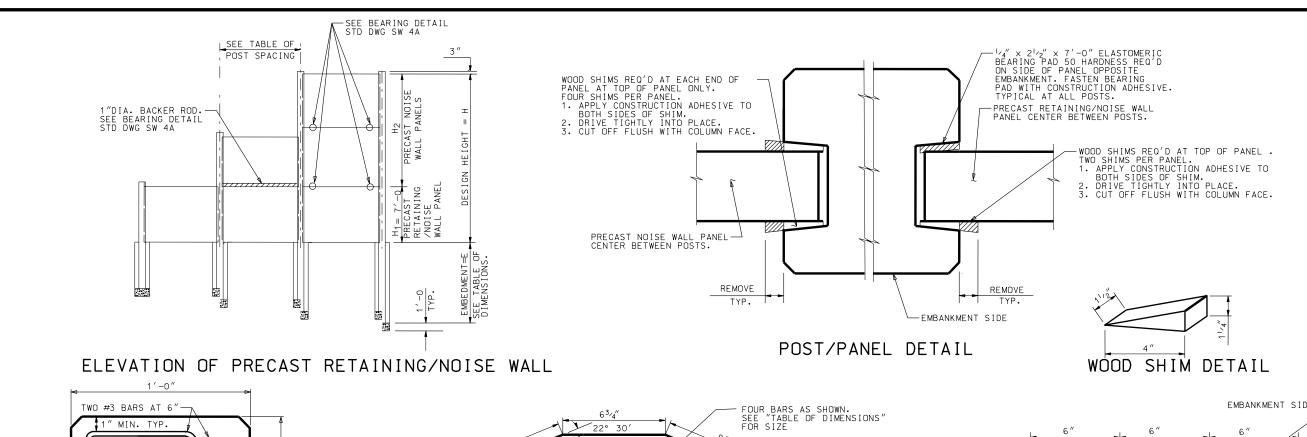
Θ= 80° TO 100°

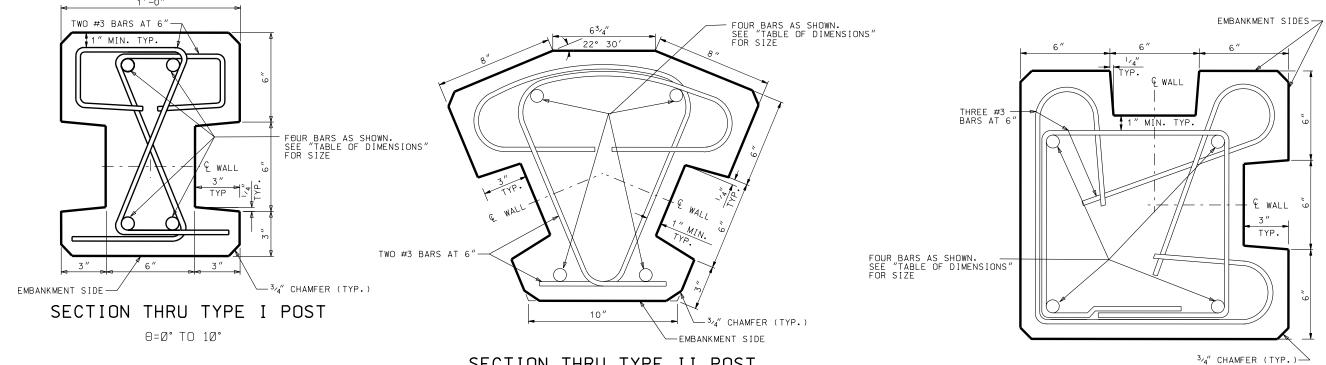
	I۱	L			REVISIONS
	LIAH DEPAKIMENI OF IKANSPOKIALION	1 16	3/30/02	F.W.	1 10/30/02 F.W. CORRECTED STD DWG CALLOUT IN "ELEVATION OF PR
	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION			_	NOISE WALL" DETAIL TO SW 3A
L - -	SALT LAKE CITY, UTAH	2 12	2/19/02	B.W.	2 12/19/02 B.W. CORRECTED THE TO DEGREE IN SECTION THRU TYPE
]		L			
	RECOMMENDED FOR APPROVAL				
	DEC.19,2002				
	CHAIRMAN STANDARDS COMMITTEE				
	APPROVED			l	
	DEC.19.2002				
	DEPUTY DIRECTOR NO. DATE APPR	ģ	DATE	APPR.	REMARKS

PRECAST CONCRET
NOISE WALL
2 OF 2

SW 3B



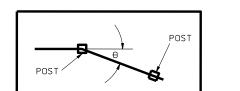




SECTION THRU TYPE II POST $\Theta=35^{\circ}$ TO 55°

			•	TABLE OF DI	MENSIONS		
DI	ESIGN	Н	Р	ANEL HEIGHT		Р	OST
Н1 -	+ H2	= H	TOP PANEL	CENTER PANEL	BOTTOM PANEL	VERTICAL BAR SIZE	EMBEDMENT "E"
7′		7′			7′	#7	4′-8
7′	3′	10′	3′		7′	#7	6′-8
7′	4′	11′	4 ′		7′	#7	7′-4
7′	5′	12′	5′		7′	#7	8′-0
7′	6′	13′	6′		7′	#7	8′-8
7′	7′	14′	3′	4′	7′	#8	9′-4
7′	8 ′	15′	4 ′	4 ′	7′	#8	10′-0
7′	9′	16′	4 ′	5′	7′	#8	10′-8
7′	10'	17′	5′	5′	7′	#9	11′-4
7′	11′	18′	5′	6′	7′	#9	12′-0
7′	12'	19'	6′	6′	7′	#9	12′-8

			POST	SPAC]	ING
₽ PC	DST	то 9	L POS	Τ	REQ'D SPACING
TYPE	I	TO	TYPE	I	12′-0
TYPE	I	TO	TYPE	ΙΙ	12′-2
TYPE	I	TO	TYPE	ΙΙΙ	12′-3
TYPE	ΙI	TO	TYPE	ΙΙ	12′-4
TYPE	ΙI	TO	TYPE	III	12′-5



SECTION THRU TYPE III POST

Θ=80° TO 100°

	-101+0+0000-100+1100+1100000-101-10				REVISION
	DEFARIMEN OF TRANSFURION				
	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION				
PRECAST CONCRETE	SALT LAKE CITY, UTAH				
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		700			
	CHAIRMAN STANDARDS COMMITTEE DATE				
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STANDARD DRAWING TITLE	DATE DATE		NO. DATE APPR.	APP	ď
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STD DWG

ADVANCE WARNING ARROW PANELS

SEE NOTE 3

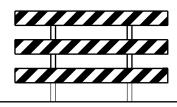
TYPE B - 4" DIA. SEALED-BEAM UNIT



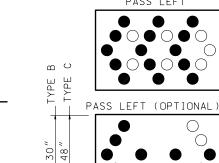
TYPE I



TYPE II

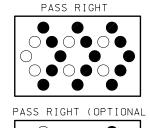


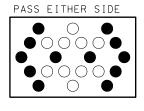
TYPE III NOTE 2

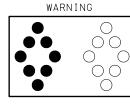


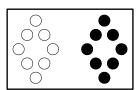
TYPE B

TYPE C









STATE MAINTENANCE AND STATE FUNDED PROJECTS ONLY

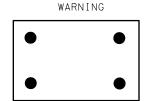


TUBULAR MARKERS DAYLIGHT HOURS ONLY

BARRICADES

NOTES 1, 2

CONES DAYLIGHT HOURS ONLY

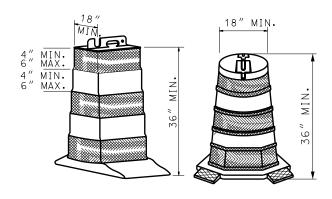


PASS LEFT

FEDERAL FUNDED PROJECTS ONLY.

60" MIN.

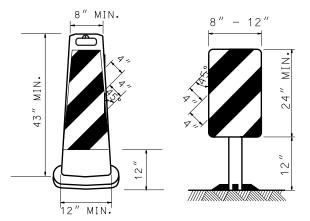
96" MIN.



ONE-PIECE RECTANGULAR W/REFLECTIVE BANDS

TWO-PIECE ROUND W/REFLECTIVE BANDS

PLASTIC DRUMS SEE NOTE 4



VERTICAL PANELS SEE NOTE 1

NOTES:

- 1. A MINIMUM OF 270 SQUARE INCHES OF RETROREFLECTIVE MATERIAL PLACED A MINIMUM OF 12 INCHES ABOVE THE ROADWAY SURFACE IS REQUIRED ON BARRICADES AND VERTICAL PANELS WHEN USED ON THE INTERSTATE OR ROADWAYS WITH A POSTED SPEED OF GREATER THAN 45 MPH. PLACE BARRICADES AND VERTICAL PANELS IN SUCH A MANNER THAT THEY ARE VISIBLE TO APPROACHING TRAFFIC.
- 2. USE SANDBAGS WITH SAND OR OTHER COMPARABLE SOFT MATERIAL AS BALLAST. DO NOT PLACE BALLAST HIGHER THAN 12 INCHES ABOVE THE ROADWAY AND DO NOT COVER ANY REFLECTIVE AREA OF RAILS OR SIGNS.
- 3. PLACE THE BOTTOM EDGE OF THE ADVANCE WARNING ARROW PANELS A MINIMUM OF 7 FEET ABOVE THE ROADWAY SURFACE.
- 4. USE PLASTIC DRUMS AS LANE CLOSURE TAPER DEVICES FOR SPEEDS 50 MPH AND GREATER.

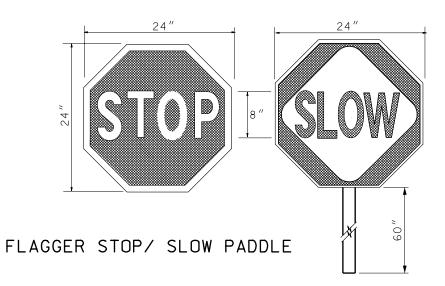
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STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	NOIT			
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U.C.	JULY 03,2002			
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<u> </u>	JULY 03.2002			
DEPLITY DIRECTOR	DATE NO. DATE APPR.	0. DA	TE ,	PPR, REMARKS
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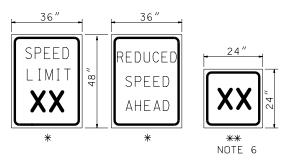
CONSTRUCTION ZONE CHANNELIZATION DEVICES

STD DWG

TC 1A





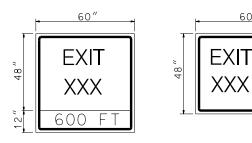


REDUCED SPEED SIGNING

* REGULATORY - BLACK/WHITE

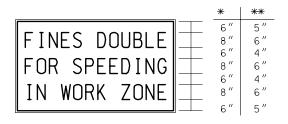
** ADVISORY - BLACK/ORANGE

XX SPEED



EXIT RAMP SIGNING

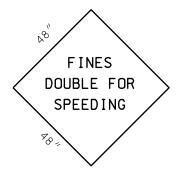
BLACK/ORANGE XXX EXIT NUMBER



FINES DOUBLE SIGN - LONG TERM APPLICATION

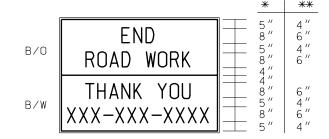
* 84" X 48" FREEWAY

** 60" X 36" CONVENTIONAL HIGHWAYS
USE SERIES "C" STANDARD HIGHWAYS ALPHABET
BLACK/ORANGE



FINES DOUBLE SIGN - SHORT TERM APPLICATION

USE 7" SERIES "C" STANDARD HIGHWAY ALPHABET USE ON RAMPS AND SIDE STREET APPROACHES BLACK/ORANGE

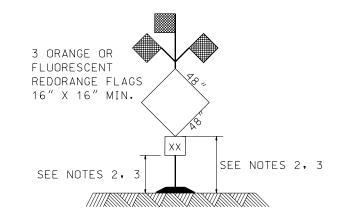


CONSTRUCTION ZONE INFORMATION SIGN

- * 84" X 60" FREEWAY
- *** 60" X 48" CONVENTIONAL HIGHWAYS

 USE SERIES "C" STANDARD HIGHWAYS ALPHABET

 XXX CONTRACTOR'S PHONE NUMBER



TYP. SIGN INSTALLATION WITH FLAGS
SEE NOTES 4, 5

NOTES

- I. CLOSE ROADWAYS WITH TYPE III BARRICADES, EXTEND THE BARRICADES ACROSS INTENDED ROAD CLOSURE A MINIMUM OF 3/4 OF THE ROADWAY STARTING FROM THE CENTER OF THE ROADWAY AND EXTENDING IN BOTH DIRECTIONS TOWARD THE SHOULDERS, PLACE A "ROAD CLOSED" SIGN (R11-2) OVER THE CENTER LINE AND THE APPROPRIATE "DETOUR" ARROW SIGNS (M4-10 L OR R) ON EACH SIDE OF THE "ROAD CLOSED" SIGN, DETOUR ARROWS ARE NOT REQUIRED IF DETOUR IS NOT AT ROAD CLOSURE.
- 2. SIGNS ON PORTABLE STANDS REQUIRE A 12 INCH MINIMUM MOUNTING HEIGHT.
- 3. SIGNS ON PORTABLE STANDS PLACED AMONG CHANNELIZING DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT.
- 4. SIGNS USING POST TYPES P1,P2 OR P3 REQUIRE A MINIMUM 84 INCHES MOUNTING HEIGHT FROM ROADWAY SURFACE. REFER TO SN SERIES STANDARD DRAWINGS.
- 5. PLACE TWO ORANGE STRIPS OF REFLECTIVE SHEETING, 4 INCHES X 24 INCHES, VERTICALLY, 12 INCHES FROM THE RIGHT AND LEFT CORNERS ON THE BACK OF SIGNS USED WITH PORTABLE STANDS. USE THE SAME GRADE OF REFLECTIVE SHEETING AS USED ON THE FRONT OF THE SIGN.
- 6. USE SANDBAGS WITH SAND OR OTHER COMPARABLE SOFT MATERIAL AS BALLAST. DO NOT PLACE BALLAST HIGHER THAN 12 INCHES ABOVE THE ROADWAY AND DO NOT COVER ANY REFLECTIVE AREA OF RAILS OR SIGNS.
- 7. PLACE ADVISORY SPEED LIMIT SIGNS ONLY IN COMBINATION WITH AND BELOW A WARNING SIGN.

	. * + C				REVISIONS
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	STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION	RUCTION			
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	RECOMMENDED FOR APPROVAL		-		
		JULY 03,2002			
	CHAIRMAN STANDARDS COMMITTEE	DATE			
		CANCEN Y IIII			
	DEPUTY DIRECTOR	DATE	NO. DATE	TE APPR.	R. REMARKS

ONSTRUCTION ZONE SIGNING

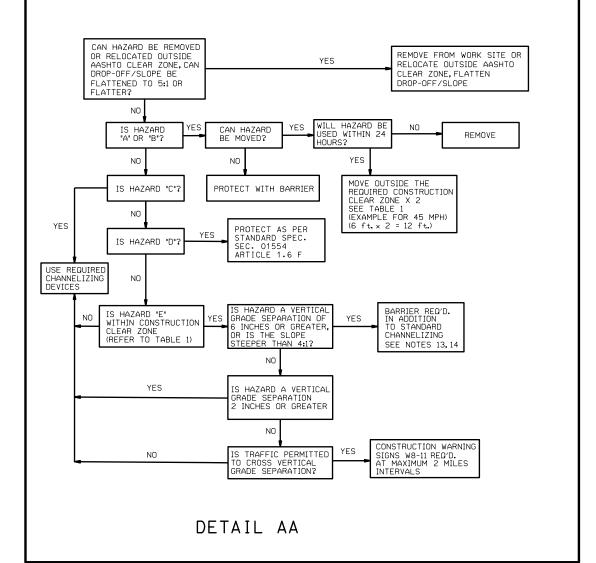
STD DWG

TC 1B

HAZARD MITIGATION

- 1. USE CONSTRUCTION CLEAR ZONE DISTANCE IDENTIFIED IN TABLE 1 TO MITIGATE THE FOLLOWING HAZARDS. HAZARDS A. NON-WORKING EQUIPMENT OR VEHICLES

 - B. STOCKPILED MATERIAL
 C. WORKING VEHICLES AND WORKERS (NON-FLAGGERS)
 D. OTHER OBJECTS AND FEATURES (IE: BRIDGE PARAPETS,
 BARRIER BLUNT ENDS, POLES)
 E. VERTICAL DROP-OFF LESS THAN 48 INCHES OR SLOPES
 STEEPER THAN 4:1
- 2. MITIGATE ALL OTHER HAZARDS OR DROP-OFFS GREATER THAN 48 INCHES WITHIN AASHTO CLEAR ZONE AS APPROVED BY THE REGION TRAFFIC ENGINEER.



NOTES:

- 1. USE CURRENT EDITION OF UDOT STANDARDS AND MUTCD FOR TRAFFIC CONTROL.
- 2. SEE STD DWG TC 1A AND TC 1B FOR CONSTRUCTION ZONE SIGNING AND DEVICE REQUIREMENT.
- 3. COVER OR REMOVE NON-APPLICABLE SIGNING, BOTH EXISTING AND CONSTRUCTION SIGNS. REMOVE NON-APPLICABLE PAVEMENT MARKINGS.
- 4. REMOVE NON-APPLICABLE PORTABLE SIGNS OR MOVE BEYOND A DISTANCE TWICE THAT OF THE CONSTRUCTION CLEAR ZONE. (SEE TABLE 1 AND DETAIL AA).
- 5. REFER TO STANDARD SPECIFICATION 01554, ARTICLE 3.5A, FOR FLAGGING REQUIREMENT FOR OPERATING TRAFFIC SIGNALS.
- 6. USE A FULL LANE CLOSURE WHEN WORK ENCROACHES INTO A TRAFFIC LANE, UNLESS THE TRAFFIC LANE CAN BE RECREATED.
- 7. CLEAN AND RESTORE PAVEMENT MARKINGS AT THE END OF EACH DAY'S OPERATION, BOTH ON AND OFF THE PROJECT, THAT ARE OBSCURED BY WORK OPERATIONS.
- 8. LIMIT ADVISORY AND REGULATORY SPEED REDUCTION OF 10 MPH, WITH THE APPROVAL FROM THE ENGINEER. FOR REDUCTIONS EXCEEDING

 10 MPH, OBTAIN APPROVAL FROM THE REGION TRAFFIC ENGINEER. USE SPEED REDUCTIONS ONLY DURING IMPACTED TIMES AND AREAS. RESTORE
 REGULATORY SPEED LIMIT AT LOCATIONS WHERE TRAFFIC IS NOT BEING IMPACTED BY CONSTRUCTION ACTIVITIES.
- 9. USE THE POSTED SPEED LIMIT PRIOR TO CONSTRUCTION TO COMPUTE THE SIGN SPACING, TAPER LENGTH, BUFFER ZONE, AND CONSTRUCTION CLEAR ZONE DISTANCE. USE THE POSTED SPEED LIMIT DURING CONSTRUCTION TO DETERMINE THE TANGENT SPACING FOR CHANNELIZING DEVICES.
- 10. USE PLASTIC DRUMS FOR LANE CLOSURE TAPER DEVICES FOR SPEEDS 50 MPH
- 11. USE DOWNSTREAM TAPER FOR OPERATIONS LONGER THAN 3 DAYS.
- 12. PLACE ADVANCE WARNING ARROW PANEL IN THE FIRST 1/3 OF THE TAPER.
- 13. USE AN APPROVED CONSTRUCTION ZONE ATTENUATOR WITH TEMPORARY PRECAST CONCRETE BARRIER WHEN APPROACH ENDS ARE WITHIN AASHTO CLEAR ZONE. DO NOT USE A TRUCK MOUNTED ATTENUATOR FOR ANY PERIOD LONGER THAN 24 HOURS.
- 14. USE PROPER LENGTH OF NEED FOR TEMPORARY BARRIER AS PER THE REQUIREMENTS OF THE CURRENT EDITION OF THE ROADSIDE DESIGN GUIDE. USE POSTED SPEED LIMIT PRIOR TO THE CONSTRUCTION ZONE FOR THE DESIGN OF THE REQUIRED LENGTH OF NEED. USE TABLE 2 FOR THE CONSTRUCTION ZONE FLARE RATE REQUIREMENT FOR TEMPORARY BARRIER. APPROVAL FROM THE REGION TRAFFIC ENGINEER IS REQUIRED FOR MODIFICATION TO THE REQUIRED

TABL					
CONSTRUCTION	CLEAR ZON				
MPH	feet				
40 & LESS	3				
45	6				
50	6.5				
55	7.5				
60	8				
65	8.5				
70	9				
75	10.5				

CONSTRUCTION Z	LE 2 Dne flare rates y barrier				
MPH FLARE					
<u>></u> 7Ø	20:1				
65	18:1				
6Ø	17:1				
55	16:1				
5Ø	14:1				
45	10:1				
<u>≤</u> 4Ø	6:1				

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STD DWG

TC 2A

TAPER, BUFFER ZONE & SIGN SPACING CHART

	POSTED SPEED	MINIMUM TAPER LENGTH(L)	LENGTH OF BUFFER(BZ)		I MUM C I NG	SIGN (SS)	ONE LANE TWO-WAY FLAGGING	
	MPH(S)	12'LANE CLOSURE	DESIRABLE	Α	В	С	TAPER LENGTH	
		feet	feet	feet	feet	feet	feet	
	30 AND LOWER	180	100	100	100	100		
	35	245	120	750	750	750	50	
NON	40	320	165	350	350	350		
INTER	45	540	220					
STATE	50	600	280			500	100	
	55	660	335	500	500		100	
	60	720	415					
	65	780	485					
T.U.T.E.D.	65	780	485					
INTER STATE	70	840	600	1000	1500	2640		
STATE	75	900	700					

1- TAPER FORMULAS

A) LANE TAPER LENGTH IN FEET $L = SW \ge 45 \text{ MPH} \qquad L = \frac{WS^2}{60} \le 40 \text{ MPH}$ 1/3 L = FOR SHOULDER CLOSURE TAPER 1/2 L = FOR LANE SHIFT TAPER WHERE L = TAPER LENGTH W = WIDTH OF CLOSURE OR SHIFT S = POSTED SPEED

2- CHANNELIZING DEVICES

- A) USE A MINIMUM OF 1 DEVICE PER FOOT OF LANE CLOSURE, PLUS 1 ADDITIONAL DEVICE TO START.
- B) ON TANGENT: S X 2 = SPACING UP TO 100 FEET MAXIMUM.
- C) LENGTH OF BUFFER ZONE (BZ) IS THE DISTANCE FROM END OF LANE CLOSURE TAPER TO WORK AREA, OR ANY OBSTRUCTION PRIOR TO WORK AREA.

TRAFFIC CONTROL DEVICE LEGEND

► SIGN (PORTABLE OR FIXED)

CHANNELIZING DEVICE (SEE STD DWG TC 1)

PLASTIC DRUMS

ADVANCE WARNING ARROW PANEL

FLAGGING STATION

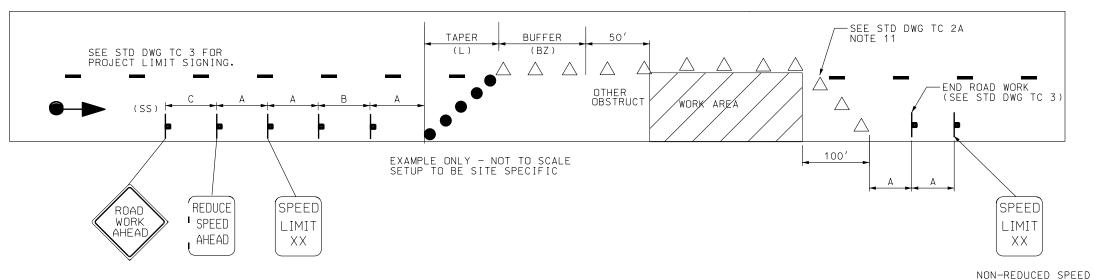
BARRIER

DIRECTION OF TRAFFIC

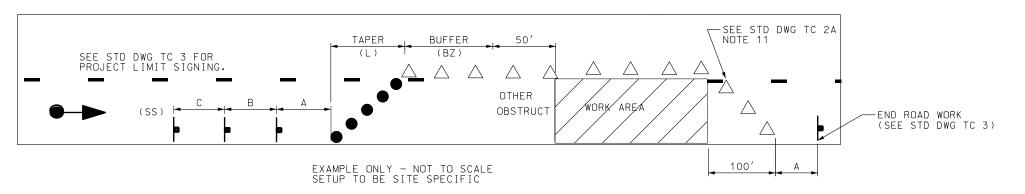
TYPE III BARRICADE

DIRECTION OF WORK VEHICLE

REDUCED SPEED WORK ZONE SIGNING



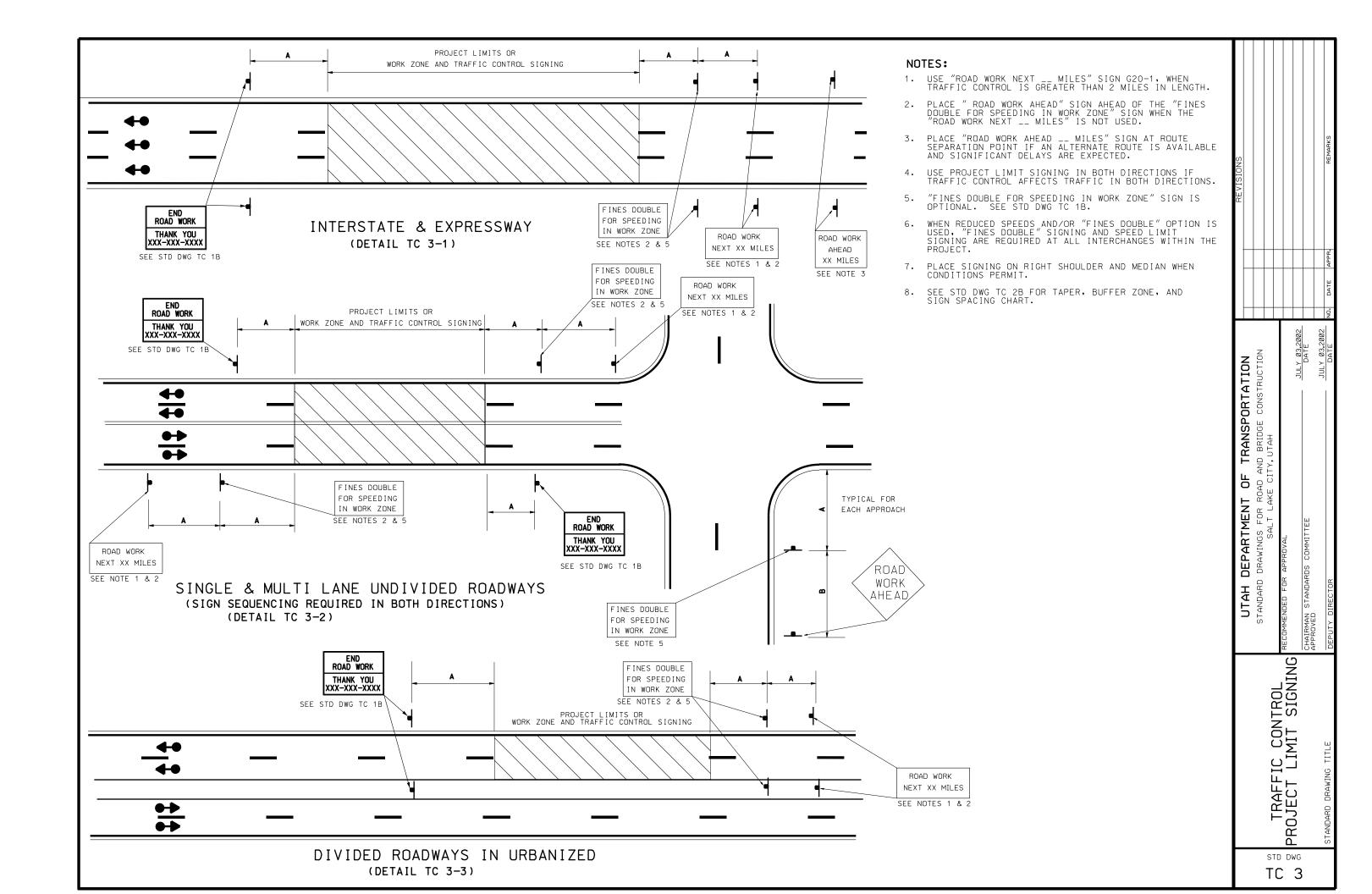
STANDARD WORK ZONE SIGNING

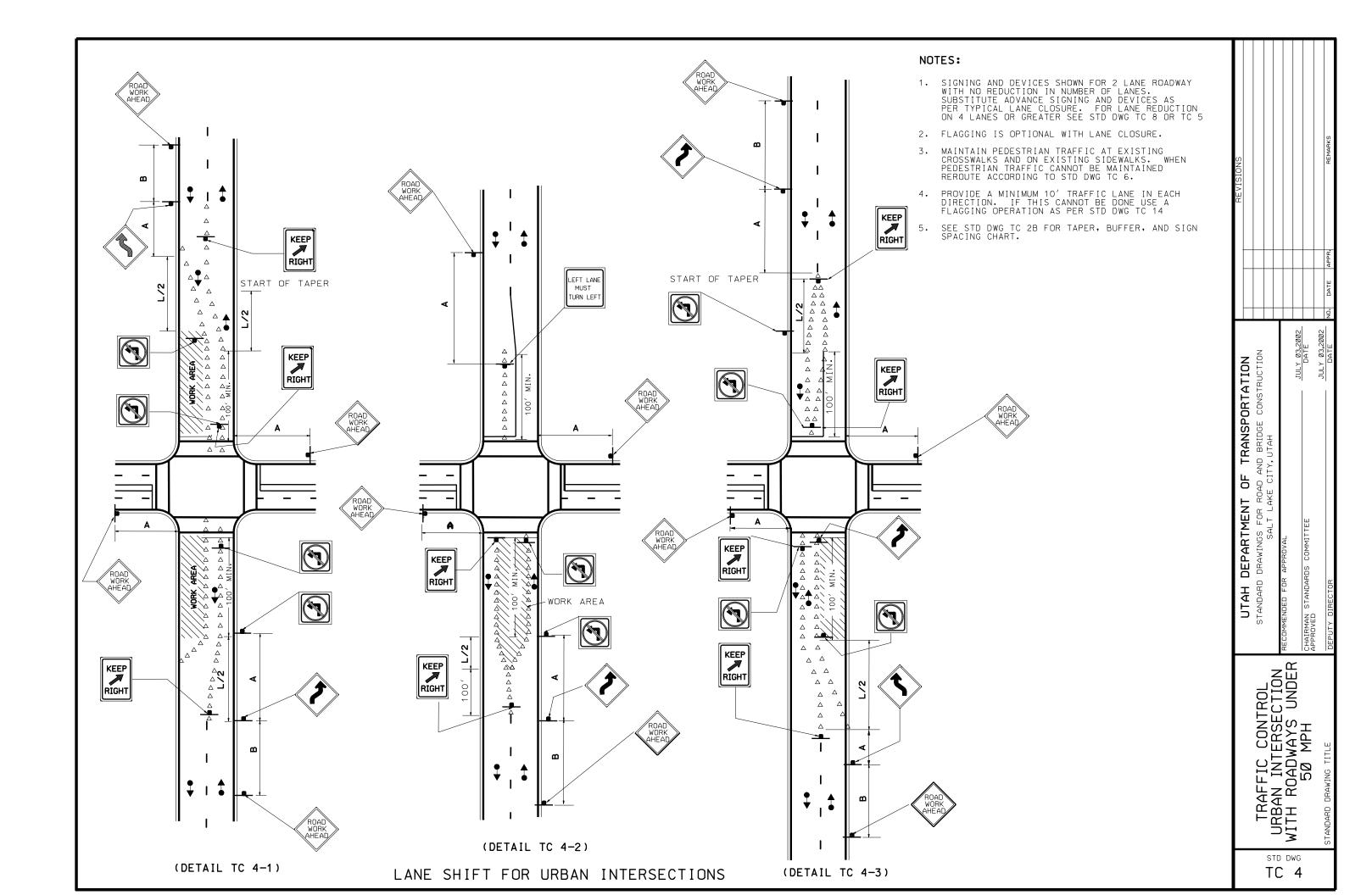


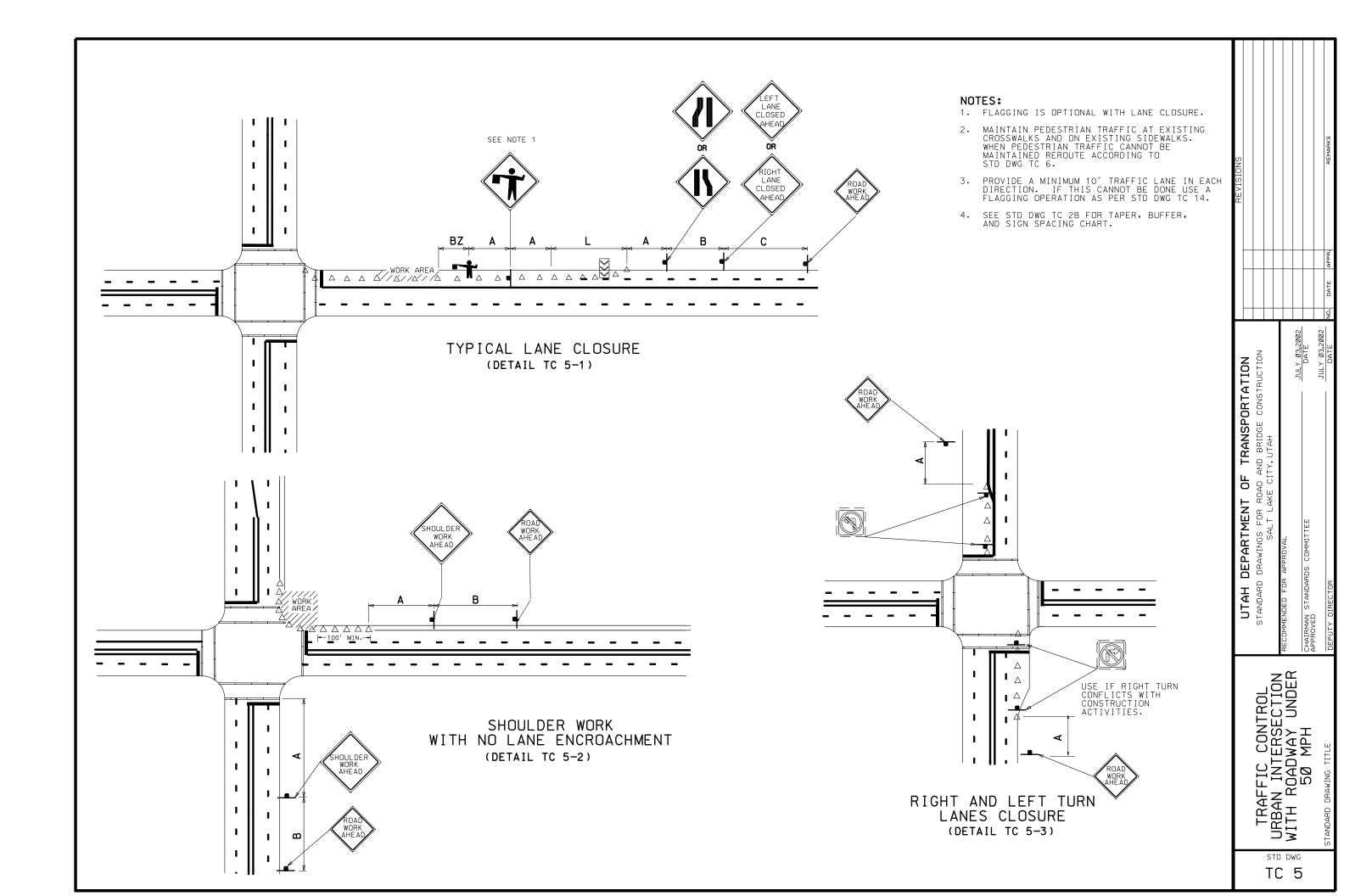
UTAH DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RECOMMENDED FOR APPROVAL

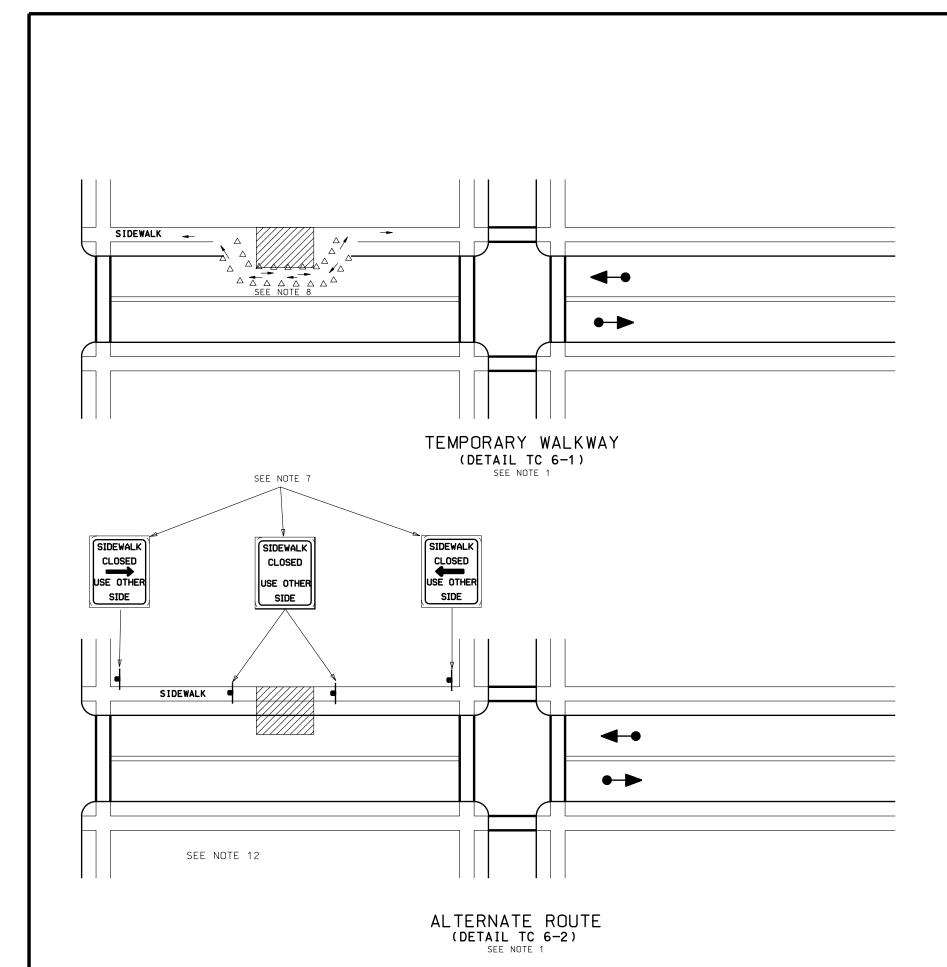
TRAFFIC CONTROL GENERAL

STD DWG









NOTES:

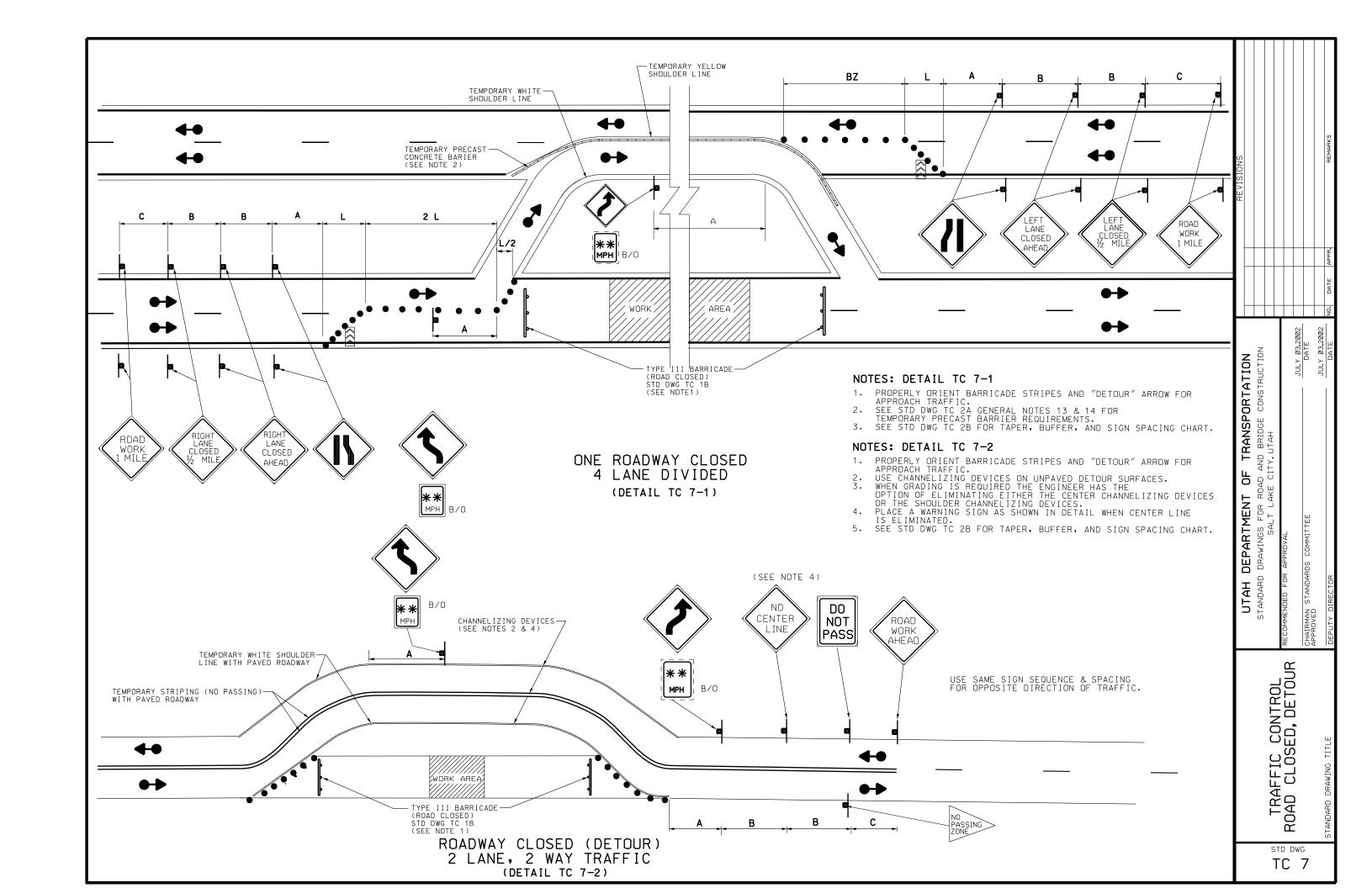
- 1. ONLY THE TRAFFIC CONTROL DEVICES CONTROLLING PEDESTRIAN FLOWS ARE SHOWN. OTHER DEVICES ARE NEEDED TO CONTROL TRAFFIC ON THE STREET. USE LANE CLOSURE SIGNING OR ROAD NARROWS SIGNS, AS NEEDED.
- 2. PROVIDE A TEMPORARY WALKWAY AROUND CONSTRUCTION AREA IF WALKWAY IS CLOSED TO PEDESTRIANS. IF WALKWAY CANNOT BE PROVIDED DIRECT PEDESTRIANS TO ALTERNATE ROUTES. (SEE DETAIL TC 6-1)
- 3. CONSTRUCT WALKWAY A MINIMUM OF 48" WIDE AND COVER WHEN POTENTIAL OF FALLING MATERIAL EXIST.
- 4. CONSTRUCT WALKWAY WITH A WOOD FLOOR OR PAVED SURFACE SO THAT IT IS TRAVERSABLE BY A WHEELCHAIR.
- 5. WHEN SIDEWALKS EXIST ON BOTH SIDES OF STREET COMPLETE WORK ON ONE SIDE AND REOPEN PRIOR TO STARTING WORK ON THE OTHER SIDE.
- 6. MOUNT SIGNS 6' MINIMUM HEIGHT.
- 7. USE A SIGN 24" X 36" MINIMUM, SIGN LEGEND TO BE 4" MINIMUM, SERIES "C" WITH AN ARROW 4" X 12".
- 8. USE CHANNELIZING DEVICES SPACED 10' ON CENTER AND CONNECTED TO EACH OTHER WITH AN ORANGE, RED, OR YELLOW POLYVINYL RIBBON OR STREAMER 4" OR GREATER IN WIDTH.
- 9. USE A 20' CORNER RADIUS TO DEVELOP A TEMPORARY WALKWAY AROUND A CORNER.
- 10. DIRECT PEDESTRIANS TO AN INTERSECTION OR MARKED CROSSWALK AS AN ALTERNATE ROUTE WHEN POSSIBLE.
- 11. CONSULT REGION TRAFFIC ENGINEER WHEN SCHOOL ROUTING PLANS ARE AFFECTED.
- 12. DO NOT DIRECT PEDESTRIANS TO OPPOSITE SIDE IF SIDEWALK DOES NOT EXIST.

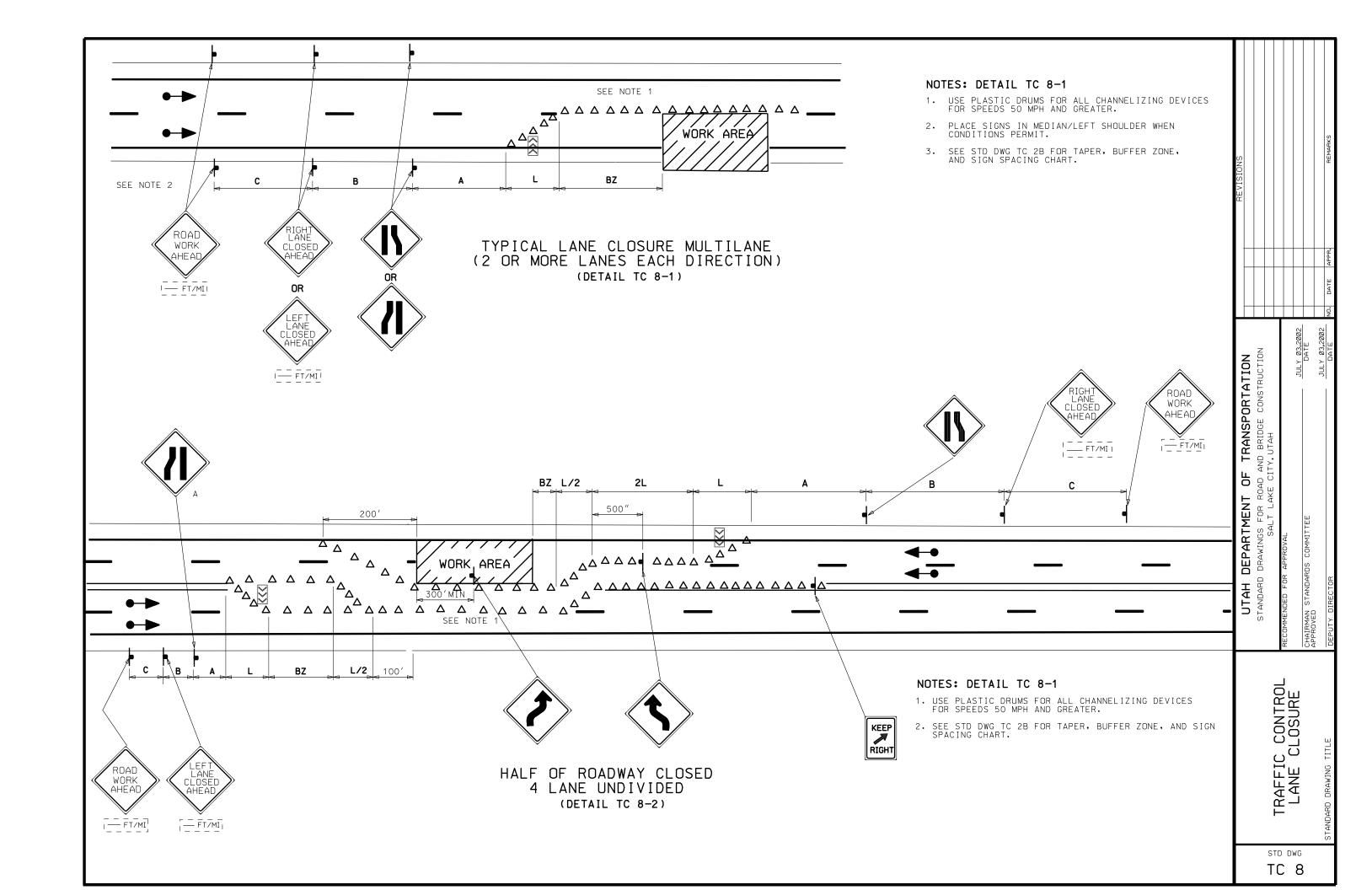
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION				
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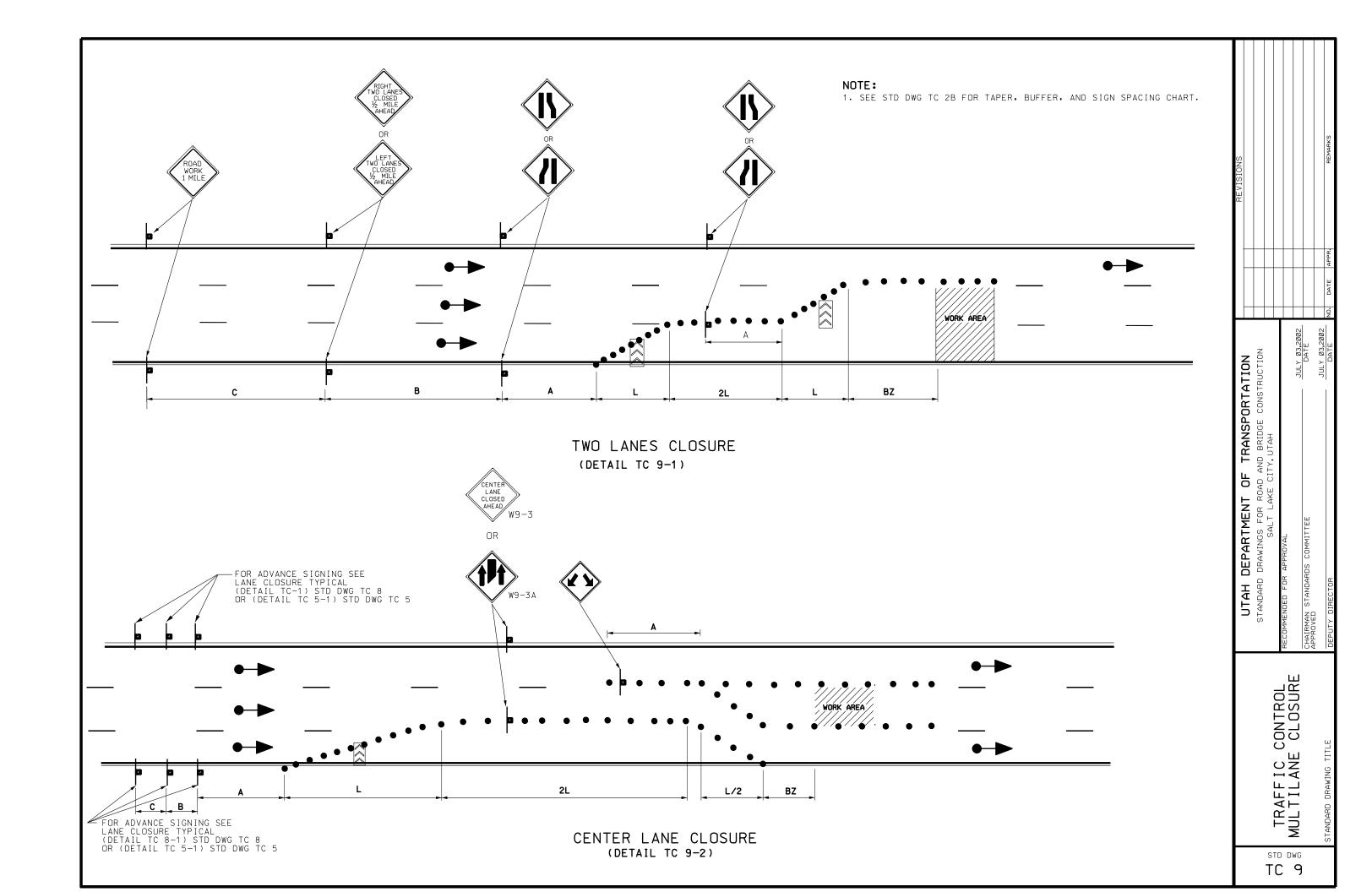
TRAFFIC CONTROL PEDESTRIAN ROUTIN

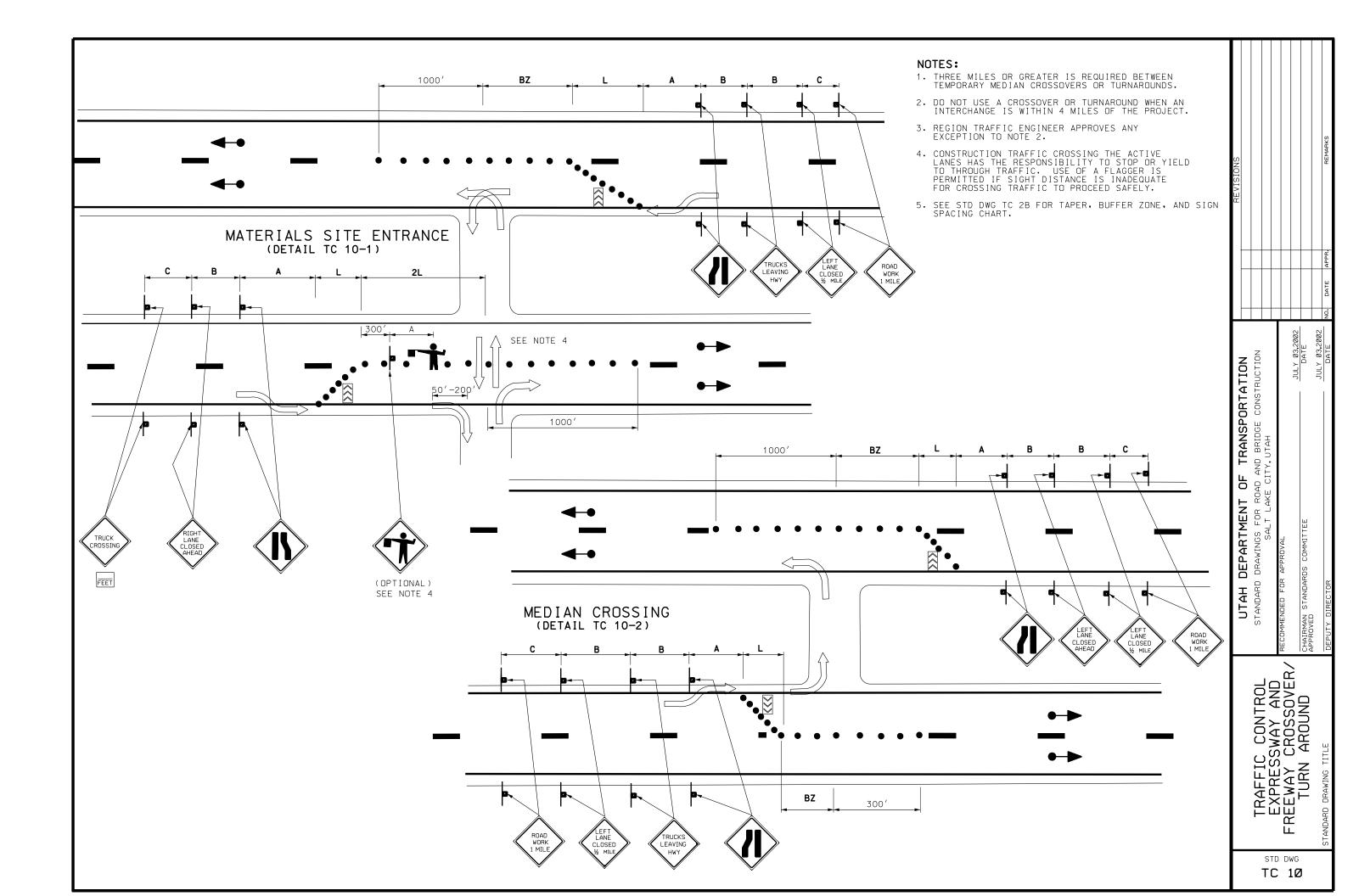
STD DWG

TC 6



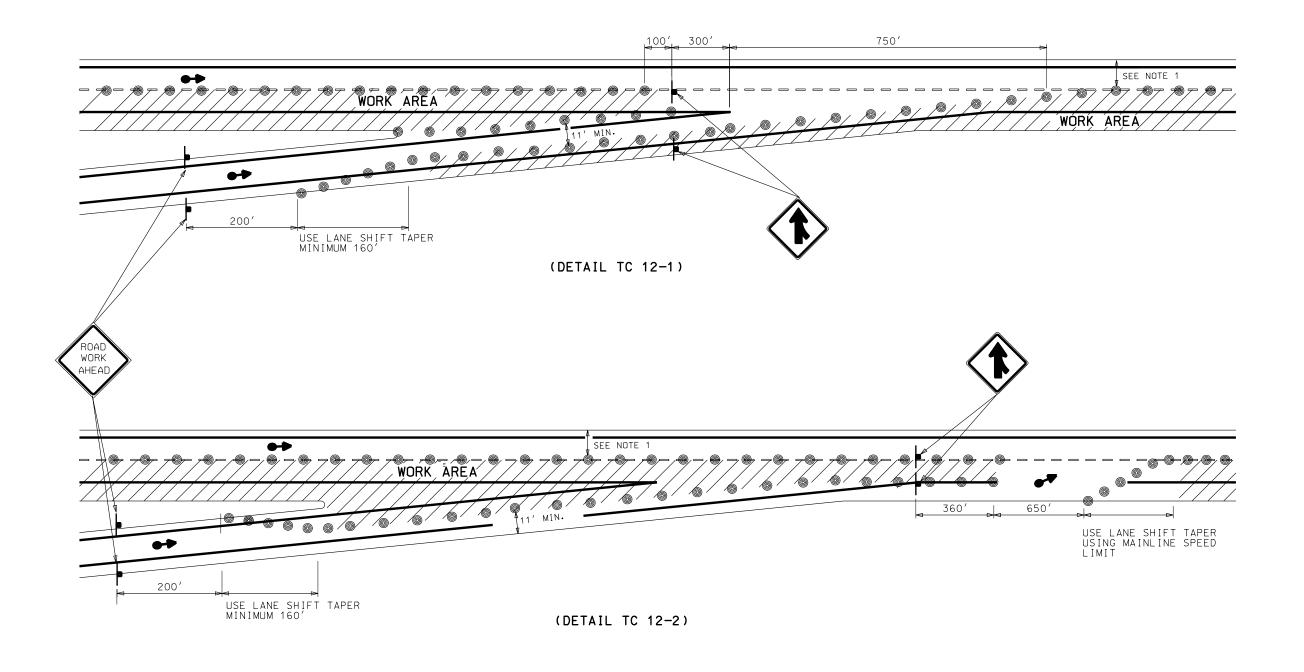






TRAFFIC CONTROL FOR EXIT RAMP GORE SEE NOTE 1 600'(SEE NOTE 2) 300'(SEE NOTE) 300′ UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt lake City, Utah (DETAIL TC 11-1) **EXIT EXIT** XXX XXX 600 FT SEE NOTE 3 SEE NOTE 3 SEE NOTE 1 400′ TRAFFIC CONTROL EXIT RAMP GORE USE LANE SHIFT TAPER USING MAINLINE SPEED LIMIT (DETAIL TC 11-2) NOTES: 1. MAINTAIN 12' TRAVEL LANE AND 2' SHOULDER WIDTHS. 2. USE CHANNELIZING DEVICES SPADED AT 50'. STD DWG 3. SEE STD DWG TC 1B. TC 11

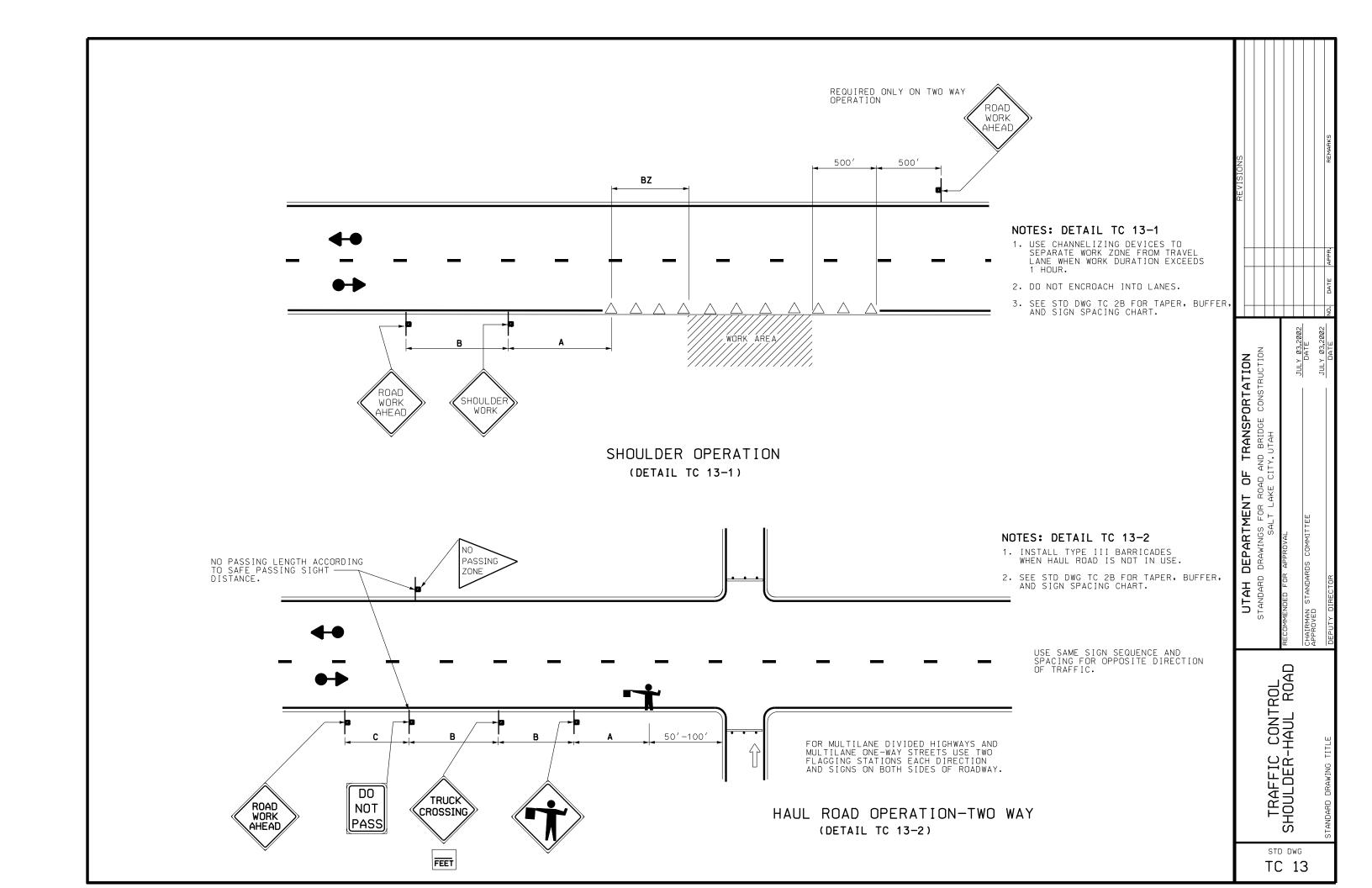
TRAFFIC CONTROL FOR ENTRANCE RAMP GORE

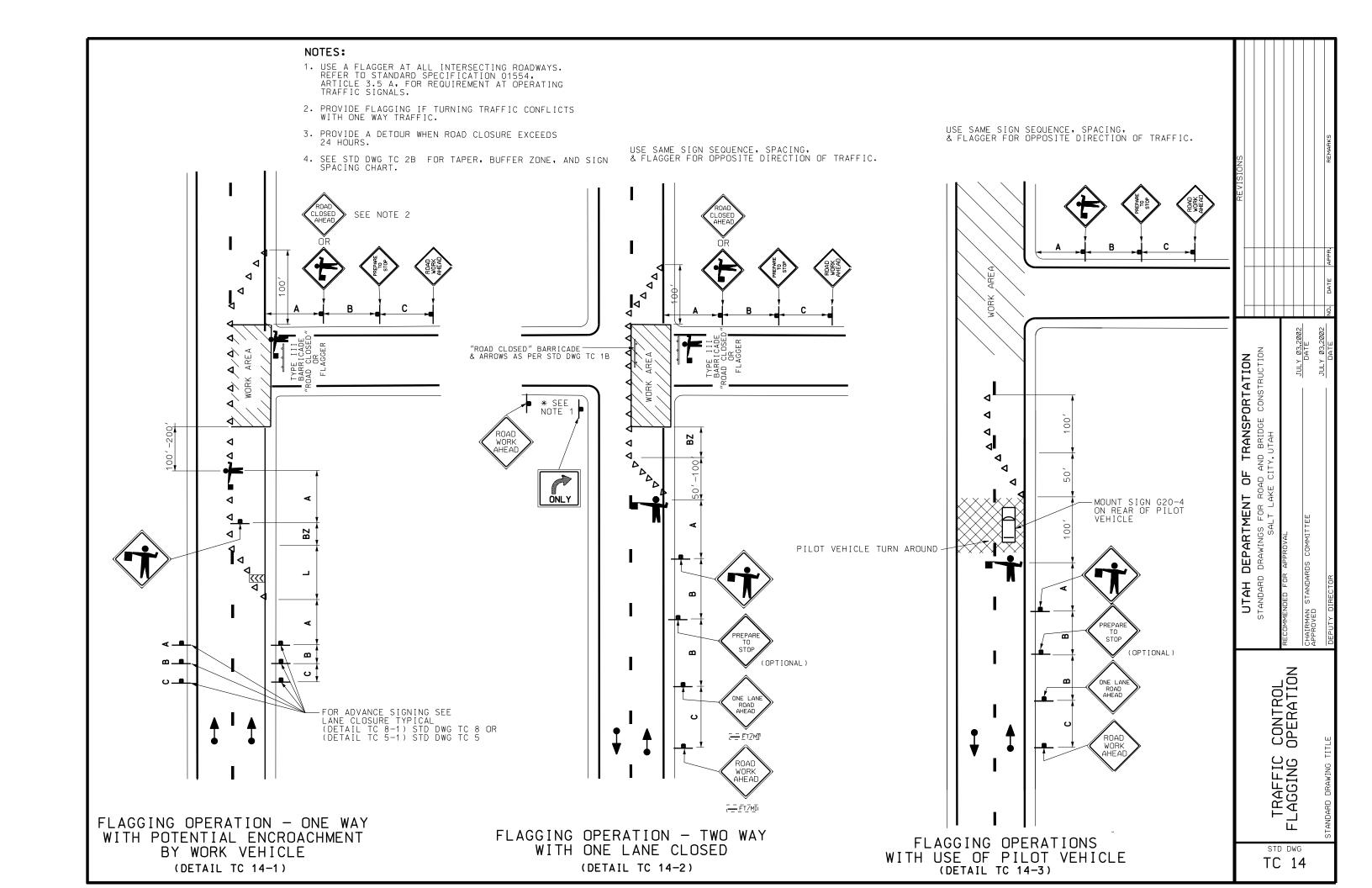


NOTE :

1. MAINTAIN 12' TRAVEL LANE AND 2'SHOULDER WIDTHS.

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2		CHAIRMAN STANDARDS COMMITTEE	DATE			
			JULY 03.2002			
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PROJECT SIGNING DAILY WORK OPERATION 2 LANE-2 WAY 2 LANE-2 WAY SAME SEQUENCE AND SPACING REQUIRED FOR OPPOSITE DIRECTION OF TRAFFIC. SAME SIGN SEQUENCE, SPACING AND FLAGGER REQUIRED FOR OPPOSITE DIRECTION OF TRAFFIC. DO SPEED SEE NOTE 7 NOT LIMIT 40 PASS SEE NOTE 4 SEE NOTE 4 DO NOT [PASS SPEED SEE NOTE 4 Á, LIMIT 40 ◁ SEE NOTE 4 ٥ ◁ PROĴECT LIMI DAILY WORK OPERATION INITIAL SET-UP END ROAD WORK SEE DETAIL TC 15-2 -MOUNT SIGN G20-4 ON REAR OF PILOT VEHICLE THANK YOU XXX-XXX-XXXX PILOT VEHICLE SEE NOTE 6 TURN AROUND (SPEED) LIMIT 40 SEE NOTE 1 & 2 REDUCED SPEED AHEAD (OPTIONAL) SEE NOTE 5 GRAVEL [NEXT XX WILES ROAL (DETAIL TC 15-1) FLAGGING /PILOT VEHICLE OPERATION (DETAIL TC 15-2)

NOTES:

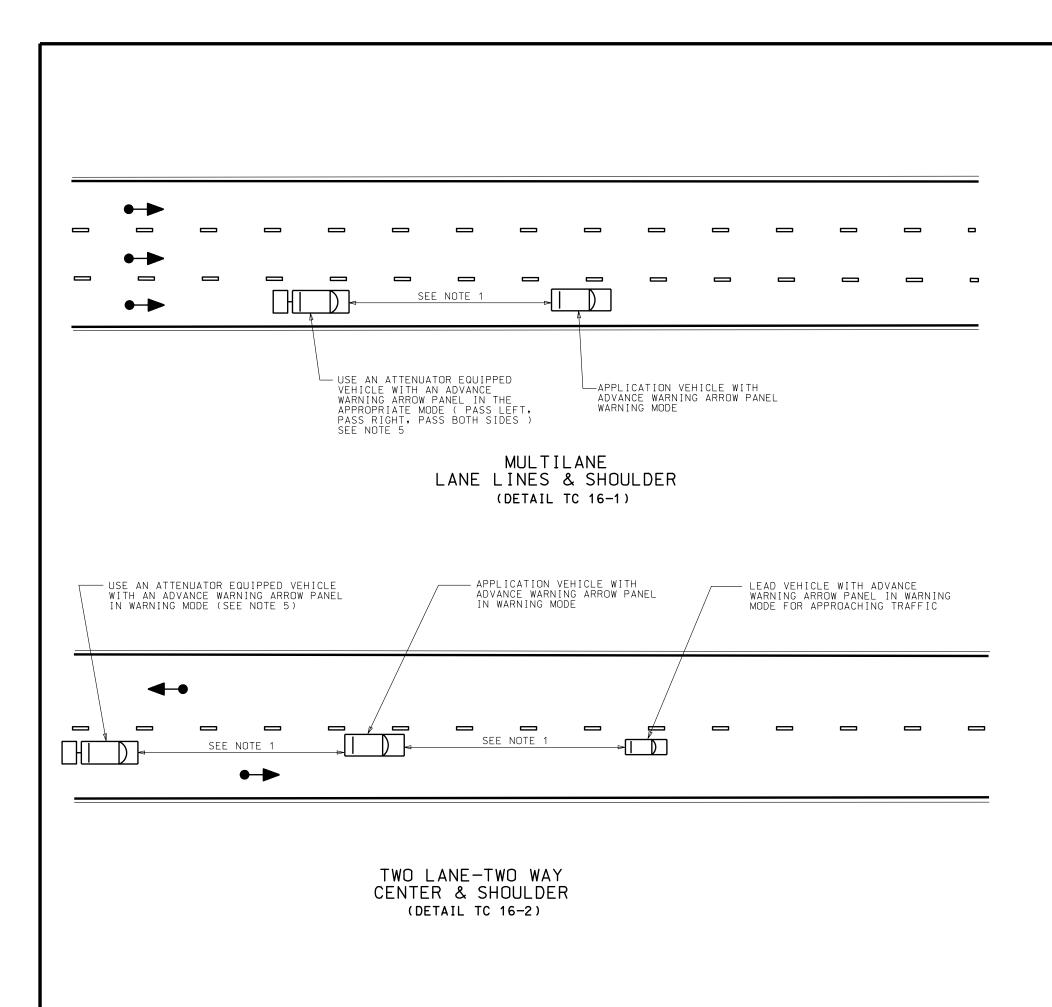
- 1. ESTABLISH A REDUCED SPEED LIMIT OF 40 MPH FOR SEAL COAT AND COVER MATERIAL OPERATIONS WHEN SPEEDS ARE GREATER THAN 40 MPH.
- 2. "REDUCED SPEED AHEAD" AND "SPEED LIMIT" SIGNING NOT REQUIRED WHEN EXISTING SPEED LIMITS ARE 40 MPH OR LESS.
- 3. MOVE DAILY WORK OPERATION SIGNING, DETAIL TC 15-2, AS WORK PROGRESSES.
- 4. PLACE "DO NOT PASS" AND "SPEED LIMIT" SIGNS AT 1 MILE INTERVALS THROUGH THE PROJECT AND AT MAJOR INTERSECTIONS.
- 5. PLACE "LOOSE GRAVEL" SIGN WITH APPROPRIATE DISTANCE MESSAGE 1/2 WAY THROUGH THE PROJECT IF PROJECT LENGTH IS BETWEEN 5 MILES AND 10 MILES. REPEAT EVERY 4 MILES ON LONGER PROJECTS.
- 6. PILOT VEHICLE NOT TO EXCEED SPEED OF 25 MPH.
- 7. USE A FLAGGER AT ALL INTERSECTING ROADWAYS DURING DAILY WORK OPERATIONS. REFER TO STANDARD SPECIFICATION 01554 ARTICLE 3.5A FOR REQUIREMENTS AT OPERATING TRAFFIC SIGNALS.
- 8. CONTINUE FLAGGING AND PILOT VEHICLE OPERATIONS UNTIL THE ENGINEER OR THEIR REPRESENTATIVE ALLOWS FREE FLOW TRAFFIC TO PROCEED.
- 9. SEE STD DWG TC 2B FOR TAPER, BUFFER, AND SIGN SPACING CHART.

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION SALT LAKE CITY, UTAH RECOMMENDED FOR APPROVAL CHAIRMAN STANDARDS COMMITTEE APPROVED DEPUTY DIRECTOR ULY 83,2802 DATE DEPUTY DIRECTOR					2002		2002	DATE NO. DATE APPR.
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TRAFFIC CONTRC 2 LANE/ 2 WAN SEAL COAT WITI COVER MATERIAL

STD DWG

TC 15



NOTES:

- 1. DO NOT EXCEED 300' SPACING BETWEEN THE APPLICATING TRUCK AND THE FOLLOW OR LEAD VEHICLE.
- 2. NO STATIC SIGNS ARE REQUIRED WITH THESE OPERATIONS.
- 3. ALL EQUIPMENT TO HAVE ROTARY STROBE LIGHTS AND EMERGENCY FLASHERS IN OPERATION.
- 4. USE TYPE B ADVANCED WARNING ARROW PANEL. SEE STD DWG TC 1A.
- 5. USE NCHRP-350 APPROVED TRUCK MOUNTED ATTENUATOR (TMA) MEETING THE REQUIREMENTS FOR THE POSTED SPEED LIMIT.

TL-2 RATED SYSTEM FOR SPEEDS 45 \leq MPH, TL-3 RATED SYSTEM FOR SPEEDS 50 \geq MPH.

JULY 03,2002 DATE UTAH DEPARTMENT OF TRANSPORTATION Standard drawings for Road and Bridge construction Salt Lake City, Utah CHAIRMAN APPROVED

TRAFFIC CONTROL PAVEMENT MARKING

STD DWG

TC 16

2002 STANDARD DRAWINGS

END OF DRAWING BOOK